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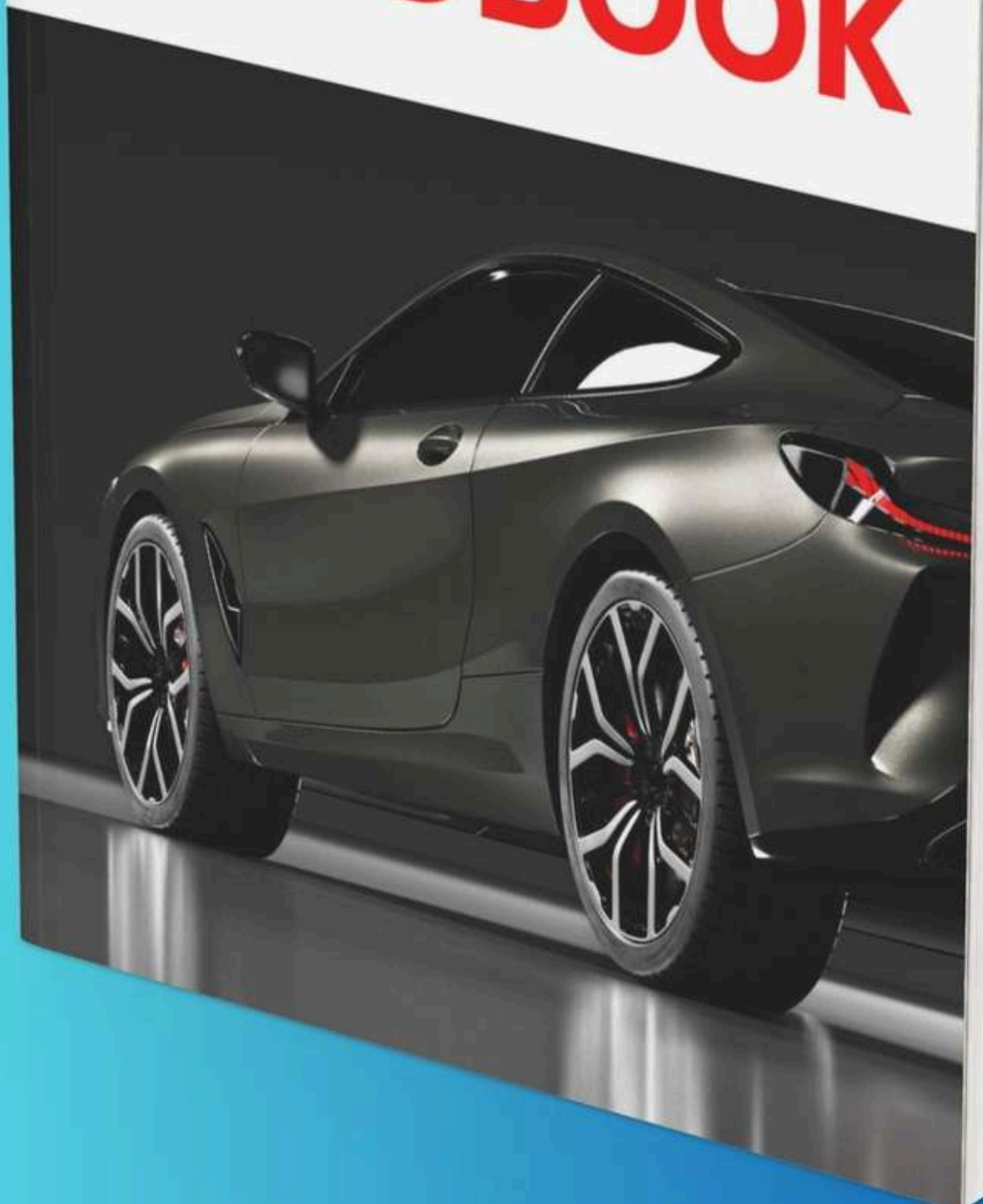

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COVER STORY

Conversation with **Dr. Sreekala M.S**

Director, School of Polymer Science and Technology | Associate Professor, School of Chemical Sciences | Mahatma Gandhi University, India

***Dr. Sreekala M. S**. is one of India's most influential polymer scientists, known for her pioneering work in green composites and biopolymers. With over 9,000 citations and recognition in Stanford University's prestigious "Top 2% Scientists" list for five consecutive years, she stands at the forefront of sustainable materials research. Currently, she leads two cutting-edge schools at Mahatma Gandhi University - Polymer Science & Technology and Nanoscience & Nanotechnology - where she bridges academia with industry-driven innovation.*

In this exclusive interview, Dr. Sreekala shares her inspiring academic journey, from her formative years under Prof. Sabu Thomas to her global research experiences in Germany and Japan. She discusses her breakthrough work in agro-fiber-reinforced bioplastics, CO_2-capturing nanocellulose–MOF aerogels, and graphene-based tyre materials—advancing sustainability through science.

She also reflects on mentorship, women's leadership in STEM, and the growing need for academia–industry collaboration to shape a circular polymer economy. As a visionary educator and researcher, Dr. Sreekala emphasizes that polymer science must move "from pollution to solution"—transforming innovation into environmental responsibility.

Her story is both a testament and a roadmap: how passion, perseverance, and purpose can redefine the future of sustainable polymers.

Academic Roots and Global Journey

You've spent your entire academic life—from student to professor—at Mahatma Gandhi University. What does that continuity mean to you personally and professionally?

Mahatma Gandhi University is my parent institution, where I began my research journey as an M.Phil. student. Since 1995, I have had a fruitful academic association with the University, which I remember with a deep sense of gratitude and pride. In 2001, I was awarded my doctoral degree from the same University. After holding several assignments at various universities and institutes, I am now back at Mahatma Gandhi University, where I can share my knowledge and expertise with the new generation of students and colleagues. Throughout my academic career, I have remained connected with Mahatma Gandhi University in one way or another, which has given me a unique sense of continuity and deep-rooted institutional familiarity. Personally, it has been immensely fulfilling to return to the same ecosystem that nurtured my early intellectual curiosity. Professionally, this continuity has allowed me to build long-term interdisciplinary collaborations, some of which have led to groundbreaking research in green materials. I have been able to witness the University's evolution and, in turn, evolve my own research agenda with it. I am now deeply engaged in academic and research activities, working to connect the global scientific community in polymers and nanoscience with Mahatma Gandhi University and to foster closer collaboration between academia and industry. This stable academic ecosystem has enabled me to focus on impactful, long-term research in polymers and nanoscience while cultivating collaborations both within India and internationally. Ultimately, Mahatma Gandhi University is not just my workplace—it is a crucible of identity, innovation, and lifelong learning.

What first drew you to polymer chemistry, and how did your early research under Prof. Sabu Thomas shape your scientific direction?

Prof. Sabu Thomas, former Vice Chancellor of Mahatma Gandhi University, was my research guide and mentor. Prof. Thomas played a pivotal role in shaping my research career. He introduced me to polymer research as a project researcher in the field of polymer composites during my M.Phil. studies. It was a trial research project on utilizing oil palm fibres to develop phenol formaldehyde composites. I successfully developed these composites with enhanced properties, and the results encouraged me to continue my research in the field of green and sustainable materials.

During my research period at Mahatma Gandhi University, I gained an enriching experience as a budding researcher under the guidance of Prof. Sabu Thomas. I carried out my research in collaboration with Dr. M. G. Kumaran at the Rubber Research Institute of India, Kottayam. During this time, I had the opportunity to visit several polymer research laboratories, become familiar with polymer characterization facilities, engage in discussions with peer research groups, and attend numerous national and international conferences, meetings, and workshops—all of which greatly supported my later research activities.

Working with Prof. Sabu Thomas, a pioneer and world-renowned scientist in polymer science, deepened my research interests and laid a strong foundation for my scientific career. He taught me the importance of interdisciplinary research, collaboration, and global networking—all of which open new avenues for scientific advancement. His guidance in submitting proposals for integrating research infrastructure and developmental activities greatly helped me in shaping my current strategic plans.

The clarity and rigor he demanded continue to influence the way I guide my own students today. His mentorship is evident throughout my teaching and research career, and I owe much of my scientific identity to those formative years in his lab.

I also gratefully acknowledge the Council of Scientific and Industrial Research (CSIR), New Delhi, for providing financial support for my entire research at Mahatma Gandhi University. During this period, I received travel support from CSIR to attend an important international event on polymer composites held in Riga, Latvia, where I met my postdoctoral mentor, Prof. Klaus Friedrich, and had a fruitful discussion about joint collaboration with him.

Your postdoctoral research took you to Germany and Japan under two prestigious fellowships. What were the key takeaways from those international experiences that still influence your work today?

My meeting with Prof. Friedrich during my visit to Latvia led to the submission of my Alexander von Humboldt postdoctoral application, which was successfully awarded in 2001. My stay in Germany was transformative—both scientifically and culturally. Prof. Klaus Friedrich, former Research Director of the Materials Science Division at IVW GmbH, University of Kaiserslautern, was a legend in polymer composites. He led the institute for many years and shaped IVW like no other. His dedication to his profession and his administrative capabilities have greatly influenced me. The Institute for Composite Materials (IVW GmbH) is devoted to polymer composites, covering all aspects from basic science to prototype manufacturing. I gained extensive experience in the synthesis, characterization, and manufacturing of various polymer composites. My colleagues at IVW, who came from different parts of the world, provided me with excellent research exposure and helped me build collaborations across borders. It is also commendable that I continue my research collaborations with IVW and with my Chinese colleague there, Prof. Xian Guinjun, a leading scientist in fiber-reinforced polymer composites from the Harbin Institute of Technology, China.

The scientific and cultural programs arranged by the Humboldt Foundation during the stay of Humboldt Fellows were a wonderful experience. They organized memorable events such as a meeting with the German President, group meetings, the annual meeting of Humboldtians, cultural programs, wine-tasting ceremonies, and an extensive tour across Germany covering major cities and introducing the history, culture, and folklore of each region. Visits to historical sites, including the Berlin Wall remnants and concentration camps, remain vivid in my memory. Most German cities are beautiful, often featuring a river and a Schloss (castle). I stayed in the picturesque city of Marburg, where I completed my German language course. The serene beauty of the River Lahn in Marburg and its lovely landscapes are still fresh in my memory. I consider my visit to Germany to have been immensely fruitful, both professionally and personally.

Later, in 2003, I visited Japan to pursue a JSPS postdoctoral fellowship. I conducted research in the Department of Mechanical Engineering, Ube Campus, Yamaguchi University, under the mentorship of Prof. Koichi Goda, whose passion for research in green materials inspired me greatly.

"Teaching is not just transferring knowledge, it is transforming minds."

Exposure to diverse scientific cultures enhanced my adaptability, leadership skills, and global perspective. I also developed lasting professional networks that continue to yield joint publications and technology transfer initiatives. The structured yet innovative research environments in Germany and Japan have greatly influenced the way I now run my own laboratory. Above all, these global experiences reinforced my belief that sustainability in polymer science must be a collective, transnational mission. These experiences broadened my understanding of polymer architecture and strengthened my commitment to interdisciplinary approaches.

Section 2: Scientific Contributions and Breakthroughs

Your work on natural fiber-reinforced bioplastics, especially with oil palm and pineapple leaf fibers, has become foundational. Which discoveries in this space do you consider most impactful?

Among my contributions, the elucidation of fiber–matrix interfacial bonding mechanisms using surface modification techniques stands out as a cornerstone discovery. We demonstrated how chemical treatments such as alkali, silane, and peroxide functionalization drastically improve compatibility between hydrophilic fibers and hydrophobic polymer matrices. This resulted in composites with enhanced mechanical strength, dimensional stability, and thermal resistance. Another important parameter to be kept in mind while selecting fibers for hybrid fiber composite systems is strain compatibility. The higher the strain compatibility, the greater the extent of synergism in properties. The micro- and nanostructure of the fibers play an important role in determining these properties. We also pioneered the use of underutilized agro-waste fibers such as oil palm, pineapple leaf, and banana, thereby adding economic value to agricultural byproducts. Another impactful breakthrough was the incorporation of nanoclay and graphene oxide into these biocomposites, leading to a new class of hybrid materials with improved barrier and flame-retardant properties. Our studies also explored biodegradability under composting conditions, showing significant reductions in degradation time without compromising material performance. These findings were critical in advancing bioplastics toward real-world packaging and automotive applications. Collaborations with industry validated the scalability and cost-effectiveness of these materials. Overall, this research has laid a roadmap for integrating natural fibers into next-generation green composites.

In recent years, you've transitioned into polymer nanocomposites and CO_2 capture materials. How do you see this evolution of your research focus aligning with global environmental needs?

That is a great question. My focus on polymer nanocomposites and CO_2 capture materials is indeed a strategic shift, driven by the growing need for sustainable solutions to address climate change. As we all know, CO_2 emissions are a major contributor to global warming, and finding effective ways to capture and utilize CO_2 is crucial. My research in polymer nanocomposites focuses on developing nanocellulose aerogels and MOFs with enhanced properties such as improved mechanical strength, thermal stability, and gas separation capabilities. By combining nanocellulose and MOFs, we have created nanocellulose–MOF aerogel composites that exhibit exceptional CO_2 capture capabilities with enhanced specificity. This hybrid material effectively mitigates the limitations of both components, overcoming nanocellulose's low specificity and the humidity sensitivity of MOFs. These advanced materials hold great promise for various applications, particularly in CO_2 capture and storage, contributing to a more sustainable future.

The alignment of my research focus with global environmental needs is multifaceted. First, the development of efficient CO_2 capture materials can help reduce emissions from industrial sources such as power plants and factories, which are among the largest contributors to greenhouse gas emissions. Second, the use of nanocellulose–MOF composites in CO_2 capture can also enable the development of more sustainable and efficient technologies. These systems have the potential to replace traditional, energy-intensive methods, thereby reducing the overall carbon footprint. Third, my research also explores the potential of these materials in other environmental applications, such as wastewater treatment.

In addition, our research focuses on developing other sustainable materials using biopolymers such as chitin and chitosan for a wide range of similar applications. By developing such materials that can address multiple environmental challenges, we can create more sustainable and resilient solutions for the future. Overall, I believe that my research focus on polymer nanocomposites and CO_2 capture materials is well aligned with the global need to address climate change and promote sustainability.

You've co-authored or edited numerous handbooks on natural polymers and foams. What role does curating knowledge in this way play in advancing your field?

Curating and editing comprehensive scientific handbooks is both a responsibility and a privilege, especially in a rapidly evolving field like biomaterials. Over the years, I have had the opportunity to co-edit several foundational volumes—including Fundamental Biomaterials (Ceramics, Polymers, and Metals), Polymer Composites (Macro to Nano), and more recently, specialized texts on Phenolic-Based Foams and Natural Polymers. These volumes serve as authoritative references for both emerging researchers and industry practitioners navigating the fast-changing polymer landscape. Editorial projects sharpen our critical thinking and provide opportunities to set future research agendas. I see them as blueprints for policy recommendations and curricular innovations as well. Importantly, they act as pedagogical tools that bridge the gap between foundational science and practical application.

These works aim to systematically organize and present the latest developments, methodologies, and applications in an accessible format for students, researchers, and industrial practitioners alike. By compiling insights from global experts, these books serve as valuable knowledge repositories, helping researchers identify current trends, research gaps, and new directions. They also foster interdisciplinary collaboration—an essential element for innovation in sustainable materials, biocomposites, and green polymer technologies. For example, the Handbook on Natural Polymers series offers a holistic view—from sourcing and characterization to surface modification and advanced applications.

In essence, these editorial contributions go beyond documentation; they shape curricula, guide young researchers, and often set the stage for the next wave of innovations. I see them as catalysts for knowledge transfer, innovation acceleration, and global collaboration within the scientific community. Ultimately, these editorial efforts are about shaping the intellectual infrastructure of polymer science.

"Science fulfills its purpose when it serves society."

When it comes to the foam industry, the growing focus on sustainability and reducing fossil fuel use has increased demand for natural rubber latex foam over synthetic alternatives. While polyurethane foams still dominate due to their favorable weight-to-cost ratio—despite environmental concerns (e.g., toluene diisocyanate)—innovations in latex foam are progressing. Efforts to reduce odor, introduce memory foam-like behavior, and enhance comfort and durability are driving niche market growth, especially in Europe. Advancements in foaming, vulcanization, and drying have improved efficiency and market potential. We are currently developing bio-based polyols from natural rubber latex and are seeking institutional and industrial collaborators for joint projects.

Complementing our experimental work, my editorial contributions have played a crucial role in disseminating emerging knowledge in this domain. Co-editing volumes such as the Fundamental Biomaterials series (Elsevier), Polymer Composites trilogy (WILEY-VCH), and recent handbooks on Phenolic-Based Foams and Natural Polymers has allowed me to curate a broad spectrum of interdisciplinary research. These works provide structured, accessible insights into materials innovation, sustainability, and applications in biocomposites, nanotechnology, and foams. Through these handbooks, we aim to foster collaboration, mentor early-career researchers, and accelerate the translation of research into real-world technologies.

Together, these hands-on research and editorial endeavors reflect a commitment to advancing materials science both in practice and pedagogy—bridging innovation with knowledge dissemination for long-term impact.

From a materials performance standpoint, how do starch-based biopolymers compare to commercial petroleum-based plastics in packaging and structural applications?

Starch-based biopolymers offer a compelling sustainable alternative, but their mechanical performance and water sensitivity remain key challenges. Compared to conventional polyethylene or polypropylene, native starch films are brittle and lack sufficient moisture resistance. However, through plasticization, crosslinking, and blending with biodegradable polyesters such as PLA or PCL, we can tailor their properties closer to industrial benchmarks. Our research has demonstrated significant improvements in tensile strength, elongation, and barrier properties using nano-reinforcements such as montmorillonite, nanochitin, and cellulose nanofibers. Modified starch composites also exhibit promising biodegradation profiles under composting and marine conditions. Furthermore, these materials are derived from renewable resources and offer end-of-life advantages such as compostability or enzymatic degradation. Economically, they add value to agricultural surplus, making them especially attractive in developing economies. For rigid packaging and trays, we have achieved 50–60% property equivalence with commercial plastics through hybrid formulations. Though not a universal replacement, starch-based biopolymers are ideally suited for single-use or short-lifecycle applications. They represent an essential tool in diversifying the green packaging portfolio.

"Polymer science must move from pollution to solution through responsible design, use, and disposal."

Your research on phenol formaldehyde nanocomposites has explored both carbon nanotubes and nanocellulose as reinforcements. Could you walk us through the comparative performance results?

Our comparative studies on phenol formaldehyde (PF) nanocomposites reinforced with carbon nanotubes (CNTs) and nanocellulose have provided valuable insights into structure–property–performance relationships across synthetic and bio-based reinforcement systems. CNT-reinforced PF nanocomposites demonstrated outstanding enhancements in electrical conductivity, thermal stability, and flexural strength due to the high aspect ratio and graphitic architecture of the nanotubes. AC conductivity measurements indicated superior performance even at lower filler loadings (0.05–0.08 wt.%), where the formation of effective conductive networks significantly boosted DC conductivity. Dynamic mechanical analysis revealed that 0.15 wt.% MWCNT offered the highest storage modulus, while 0.05 wt.% yielded a higher glass transition temperature. TEM imaging confirmed uniform MWCNT dispersion, and water sorption studies showed reduced moisture uptake with CNT inclusion —particularly as diffusion, sorption, and permeation coefficients increased with temperature. In contrast, nanocellulose-reinforced PF composites, though lower in electrical conductivity, offered superior environmental benefits such as biodegradability, reduced density, and compatibility with sustainable design principles. Stress–strain analysis of CNF-coated hybrid composites exhibited improved tensile strength, with 0.5 wt.% CNF showing optimal reinforcement. FESEM images of pull-out tests further highlighted strong fiber-matrix interaction and reduced debonding. Dielectric studies revealed enhanced charge carrier activity and AC conductivity due to homogeneous dispersion and interlinked networks at 0.5–1 wt.% CNF loading. Our DFT-based modeling and experimental validations suggest that PF-nanocellulose composites show promise as high-performance electroactive polymer materials for next-generation electronic applications. Overall, CNT systems were superior in modulus, thermal resilience, and electrical properties, making them ideal for ESD-sensitive and high-performance applications. Meanwhile, nanocellulose-based PF composites excelled in moisture resistance and toughness, pointing to their suitability for sustainable packaging, construction, and automotive interiors. Interestingly, hybrid systems integrating both fillers revealed synergistic effects, highlighting the importance of interfacial engineering and dispersion strategies.

Regional Priorities and Market Relevance

Kerala is rich in agro-fibers like coconut and sisal. How have local materials influenced your research in biodegradable composites?

Kerala's agro-fiber wealth has played a pivotal role in shaping our materials research strategy, anchoring it firmly in regional relevance. Coir, banana fiber, and sisal are abundantly available, renewable, and possess unique morphologies ideal for composite reinforcement. All these fibers were found to be very effective in developing biocomposite systems. Fully biodegradable green composite systems were developed from biopolymers like starch, cellulose, and chitin, along with natural reinforcements. Our work has focused on surface treatment protocols to enhance fiber–polymer adhesion and reduce moisture uptake. We have also optimized processing techniques for these natural fiber composites. The resulting materials have shown excellent mechanical performance and thermal insulation, suitable for roofing, paneling, and automotive interiors.

"Interdisciplinary collaboration unlocks creative potential that no single discipline can reach."

Kerala's agro-fibers offer a dual benefit: reducing synthetic fiber dependence and adding value to waste biomass. We are exploring various treatments for these fibers to improve biodegradability. Our vision is to establish decentralized fiber preprocessing units for various abundant fibers for versatile applications. This research, rooted in local resources, is globally scalable and ecologically prudent. These composites can find versatile applications, including automotive, structural, and engineering uses.

With SPST being closely aligned to industry needs, what specific sectors—like rubber, packaging, or energy—do you see as ripe for academic-industry collaboration?

The sectors most primed for academic–industry synergy are green rubber technology, biodegradable packaging, energy-harvesting materials, and polymer-based sensors.

In Indian rubber industries, the latex sector is showing post-COVID growth in both production and consumption, yet it remains fragmented and underutilized compared to global players like Thailand and Vietnam. Given the push for sustainability and circular economy practices, there's a strong case for collaborative work in:

- Developing value-added latex-based products using advanced foaming and vulcanization technologies.
- Bio-based polyol development from natural rubber latex, offering greener alternatives to polyurethane.
- Recycling and reclaiming latex waste, improving segregation methods and product purity for reuse in molded and extruded goods.
- Enhancing circularity in latex processing to reduce landfill/incineration losses.

Such partnerships can also help improve the sector's share in national rubber demand, which lags behind international benchmarks. This presents a timely opportunity for SPST to collaborate with both organized and unorganized industry players, bridging gaps through innovation, technology transfer, and skilled manpower.

In packaging, there is a clear industry pull for compostable films, bio-foams, and printable biodegradable inks. Our membrane and nanogenerator research aligns well with the energy sector's needs for flexible electronics and lightweight battery components. We are also working on co-developing polymer membranes for water purification and CO_2 sequestration. Collaborations with tire companies, packaging units, and electronics firms are increasingly translating into joint patents and product launches. Academic institutions must not only supply innovation but also support techno-commercial validation. SPST is uniquely positioned to act as a bridge between invention and implementation.

You've spoken at events like RUBBERCON and collaborated with tire companies. What are the key challenges and opportunities in translating green materials from lab to factory?

Translating green materials from lab to industry is a multifaceted challenge that requires simultaneous innovation, policy alignment, and stakeholder education. India, with its robust academic ecosystem and growing demand for sustainable materials, is well-positioned to emerge as a key player in the transition to green rubber technologies. However, translating innovations from the lab to industrial-scale applications remains a significant challenge. The shift toward green materials such as bio-based fillers, polymers, and additives must address core issues of availability, cost competitiveness, performance, scalability, and infrastructure gaps.

Key Challenges:

- *Raw Material Availability & Cost*: Many bio-based materials derived from agricultural or forestry residues—such as rice husk ash, lignin, or cellulose nanomaterials—face limited large-scale availability. Inconsistent quality and supply chains raise the cost of these materials, making industrial adoption uncertain, especially in a price-sensitive market like India.

- *Performance Parity with Conventional Materials*: Green materials often face skepticism due to concerns about durability, processability, and compatibility with existing compounding and manufacturing processes. Bridging this performance gap requires advanced research in surface modification, dispersion techniques (e.g., wet mixing), and nanotechnology.

- *Scaling Technologies Beyond Lab Scale*: While laboratory synthesis and small-batch processing show promise, upscaling green materials while maintaining quality, uniformity, and environmental advantages is a major hurdle. There is a lack of pilot-scale facilities that can help bridge academic innovation with commercial production.

- *Fragmented Industry Structure*: A large portion of India's rubber manufacturing sector is in the unorganized or small-scale segment, lacking the infrastructure and technical capabilities to adopt advanced green materials or automated processes.

- *Lack of Industry–Academia Integration*: Many research findings remain confined to academic journals due to insufficient collaboration with industry partners. Technology transfer mechanisms, funding support, and policy alignment are often inadequate or bureaucratic.

Opportunities:

One of India's greatest strengths in this transition is the large and growing availability of natural rubber (NR) latex, which presents a critical opportunity for sustainable product innovation. In the fiscal year 2024–25, latex concentrate production reached 108,500 MTA, with a compound annual growth rate (CAGR) of over 6% in the post-COVID period. Despite this, latex's share in India's overall natural rubber consumption remains around 7.5%, significantly below the global average of 11%—highlighting untapped potential. As a renewable, biodegradable, and low-carbon-footprint material, NR latex is an ideal candidate for replacing synthetic, fossil-based alternatives in foams, medical products, coatings, adhesives, and more. Additionally, the availability of agricultural waste and bio-fillers such as rice husk ash and lignin can be integrated into latex compounding to further enhance sustainability. With the right processing techniques and circular design approaches, India can use its NR latex advantage to spearhead the production of eco-friendly, high-performance rubber goods for both domestic and global markets.

Other areas with scope for exploration include:

- *Agricultural Biomass and Waste Valorization*: India generates vast quantities of agricultural residues that can serve as feedstock for bio-fillers and biopolyols. With targeted processing technologies, these can replace carbon black or fossil-derived chemicals in rubber compounding.

- *Process Innovation & Automation*: Smart manufacturing, automation, and digitalization offer a pathway to improve energy efficiency, reduce material waste, and enable better control over product consistency—key for handling newer green formulations.

- *Circular Product Design and Recycling*: Growing attention to life cycle assessment (LCA) and circular economy strategies is fostering interest in recyclable rubber formulations, devulcanization technologies, and closed-loop manufacturing systems.

- *Government Support and Start-Up Ecosystem*: Programs such as Startup India, PM Gati Shakti, and Make in India offer a conducive environment for scaling green material innovations. Opportunities exist for academia to partner with emerging clean-tech start-ups or MSMEs for pilot-scale demonstrations.

- *Global Market Alignment*: With growing global demand for sustainable materials—especially from European and North American markets—India has the opportunity to position itself as a competitive exporter of eco-friendly rubber goods and formulations, provided regulatory and quality benchmarks are met.

You are currently leading a DST-supported project on silica-graphene oxide hybrid composites for green tyre inner liners. What mechanical or thermal parameters are most critical in this application?

Yes, we are currently leading a DST-supported project focused on the development of silica–graphene oxide (GO) hybrid nanostructured composites for green tyre inner liner applications. The key objective of this project is to engineer a core–shell filler architecture using amino-functionalized silica as the core and graphene oxide as the shell, and integrate it with natural rubber (NR) or chloro-butyl rubber (CIIR). This approach enhances the barrier properties by creating a tortuous path for gas molecules, thereby reducing air permeability, which is critical for maintaining tyre pressure in tubeless tyres.

In this application, the most critical mechanical and thermal parameters include:

- ***Tensile strength and elongation at break,*** which ensure the liner's durability under cyclic stress.
- ***Young's modulus,*** which governs the stiffness and flexibility balance.
- ***Gas permeability***, which directly impacts inflation pressure retention.
- ***Dynamic mechanical properties (DMA)*** such as storage modulus and tan delta, to assess the viscoelastic behavior under operational conditions.
- **Thermal stability**, particularly heat build-up and DSC behavior, which are crucial for long service life under varying temperature cycles.

As part of our broader effort to transition towards sustainable tyre components, we are also heading a complementary project on the use of nanocellulose—a bio-derived filler with excellent mechanical strength and low density—to develop lightweight green tyre components. This project addresses two critical challenges: (i) modification of nanocellulose (e.g., via silylation or palmitoyl chloride) to improve thermal stability and compatibility with hydrophobic rubber matrices, and (ii) achieving uniform dispersion of nanocellulose in NR/SBR blends.

"The future belongs to multifunctional polymers—sustainable, smart, and responsive."

Further, we are actively exploring the formulation of natural rubber and its modified derivatives to fully or partially replace high-cost and petroleum-derived halobutyl rubbers in inner liner applications. Given NR's renewability and compatibility with CIIR, such hybrid formulations could result in cost-effective, eco-friendly alternatives with optimized performance. By harnessing nanotechnology, bio-based fillers, and environmentally friendly compounding techniques, our research aligns with key national priorities. It adds value to locally produced natural rubber, offering direct benefits to rubber farmers across India. Additionally, it reduces dependence on petroleum-derived materials and helps lower rolling resistance—contributing to decreased CO_2 emissions and enhanced fuel efficiency. This initiative also reinforces the goals of the "Make in India" campaign by fostering scalable, domestically sourced innovations for the tyre industry.

The expected outcome is a next-generation inner liner compound that combines low permeability, mechanical robustness, reduced weight, and eco-friendliness—an important stride toward truly sustainable and high-performance tyres. This project represents a convergence of nanoscience and green engineering for next-generation mobility.

Your recent research focuses on hybrid nanogenerators. What end-use applications are being targeted, and how do you assess their real-world durability under practical operating conditions?

Hybrid piezoelectric and pyroelectric nanogenerators are being explored as promising technologies for harvesting ambient energy from mechanical vibrations and thermal fluctuations in dynamic environments. These systems offer potential applications in self-powered sensors, structural health monitoring, wearables, and autonomous electronic devices, particularly where replacing or recharging batteries is challenging. The key focus is to develop materials and device architectures that can efficiently convert mechanical and thermal stimuli into electrical energy while maintaining long-term stability under real-world conditions.

Within this broader context, we are currently working on a project funded by Apollo Tyres, which specifically targets energy harvesting from the mechanical vibrations occurring inside a rolling tyre. The goal is to design a piezoelectric nanogenerator (PENG) capable of capturing strain energy generated during tyre deformation and converting it into electrical power. This energy can be used to drive low-power electronics such as tyre pressure monitoring systems (TPMS), temperature sensors, or other embedded diagnostic tools, contributing to the development of smarter, self-sustaining vehicle systems. My role in the project involves material selection, device fabrication, and structural optimization of the nanogenerator to ensure maximum energy output while withstanding the harsh mechanical and thermal conditions inside the tyre.

We are also conducting durability assessments by subjecting the devices to cyclic loading, temperature variations, and simulated road conditions to ensure reliable long-term performance. Apollo Tyres' involvement has been pivotal, not only in supporting the research financially but also by providing critical insights into tyre dynamics, material compatibility, and industry-specific performance benchmarks. This collaboration helps us transition from lab-scale development to practical, road-ready solutions that align with real-world automotive demands. Through this project, we aim to demonstrate how integrated energy-harvesting technologies can support the evolution of intelligent mobility systems and promote energy-efficient design in the transportation sector.

You are working on the development of functional biomaterials aimed at addressing challenges in drug delivery and wound healing. What types of materials and strategies are you exploring to enhance therapeutic efficacy, and how do you evaluate their biocompatibility and performance in physiological conditions?

My research in the biomedical field focuses on the development of advanced systems for drug delivery and wound healing, with an emphasis on designing materials that can interact effectively with biological environments. These systems include hydrogels, aerogels, electrospun membranes, 3D-printed scaffolds, and piezoelectric patches, each offering unique advantages for therapeutic applications.

Hydrogels, for example, are well-suited for wound healing and drug delivery due to their high water content, softness, and ability to mimic the extracellular matrix. Aerogels offer an ultralight structure, high surface area, and porosity, making them excellent platforms for sustained drug release and tissue regeneration. Electrospun nanofibers and 3D-printed scaffolds allow for precise architectural control and drug incorporation. When we combine these with bioactive extracts or nanoparticles, they not only support cell growth but also actively combat infection and inflammation. Piezoelectric patches introduce the potential for mechanical stimulation, using generated electrical cues to accelerate tissue repair and regeneration.

Across these platforms, the focus is on achieving controlled drug release, moisture management, biocompatibility, and mechanical stability, depending on the application. Evaluations typically involve in vitro biological assays to assess cytocompatibility, drug release kinetics, and structural integrity, followed by in vivo models when needed to examine wound healing efficacy and therapeutic performance under realistic physiological conditions.

The principal goal is to develop multifunctional, responsive systems that not only deliver therapeutic agents efficiently but also support and enhance the body's natural healing processes, ultimately advancing patient care and clinical outcomes.

What potential do you see in graphene-based fillers for improving rolling resistance, fuel efficiency, or heat dissipation in tyre compounds?

Graphene-based fillers, especially in hybrid or functionalized forms, offer a pathway to the next generation of high-performance, energy-efficient, and safe tire compounds. They foster a beneficial set of properties: lower rolling resistance (better fuel economy), higher wet grip (safety), improved heat dissipation (durability), and extended compound lifetimes. Graphene-based fillers offer tremendous potential in enhancing tire performance, particularly by reducing rolling resistance, improving fuel efficiency, and enabling better heat dissipation.

Owing to its two-dimensional structure and high surface area, graphene forms strong, well-dispersed filler networks within rubber matrices, enhancing crosslinking density and filler–polymer interactions. This leads to lower hysteresis losses and reduced energy dissipation during deformation, which are key factors in lowering rolling resistance and boosting fuel economy. When used in combination with silica or carbon black, especially in green tire formulations, graphene enables synergistic effects that further improve dynamic mechanical properties. Even at low loadings, graphene derivatives can partially replace traditional fillers, maintaining performance while lowering material costs.


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Additionally, graphene's high intrinsic thermal conductivity allows for efficient heat transfer, minimizing heat build-up during high-speed operation and improving overall thermal stability. Hybrid networks with conductive oxides like Al_2O_3 or ZnO further enhance these effects, increasing both tensile strength and thermal conductivity. These properties not only contribute to better fuel efficiency and safety but also enhance tire durability by reducing oxidative degradation and aging, making graphene a highly effective multifunctional filler for next-generation sustainable tires.

How do you see the impact of nanotechnology research in the future of rubber and tyre industry?

Nanotechnology research is set to fundamentally transform the rubber and tyre industry by enabling the development of high-performance, multifunctional, and sustainable materials. As tyres are expected to meet increasingly demanding performance, safety, and environmental standards—especially with the rise of electric and autonomous vehicles—nanotechnology offers powerful tools to tailor material properties at the molecular level.

Through the incorporation of nanofillers such as carbon nanotubes (CNTs), graphene, nano-silica, nanoclays, and metal oxides, rubber nanocomposites have demonstrated exceptional improvements in mechanical strength, abrasion resistance, thermal stability, and barrier properties. These enhancements lead to tyres with longer lifespans, reduced rolling resistance, better grip, and improved air retention. From a manufacturing perspective, nanocomposites enable tyres that perform better under extreme conditions without compromising flexibility or comfort.

For instance, nanoclay-reinforced inner liners reduce air permeability, improving fuel efficiency and tyre durability, while CNT- or graphene-reinforced treads offer better wear resistance and dynamic responsiveness. These advancements directly support the industry's goals for safer and more energy-efficient mobility.

Moreover, nanotechnology opens new frontiers in "smart tyre" development—where embedded nanomaterials could allow real-time sensing of temperature, pressure, and wear conditions, contributing to predictive maintenance and enhanced vehicle safety. The growing interest in hybrid nanofillers and bio-based nanocomposites also aligns with global sustainability goals, offering pathways to greener production and material circularity.

However, challenges such as achieving uniform dispersion of nanofillers, scaling up production processes, and managing material costs still need to be addressed. Ongoing research is tackling these hurdles through advanced surface modifications, processing innovations, and material modeling techniques.

In conclusion, nanotechnology will play a pivotal role in the evolution of the rubber and tyre industry—enabling the shift from conventional tyres to next-generation materials that are smarter, stronger, lighter, and more environmentally responsible. Its impact will extend beyond material performance to reshape how tyres are designed, monitored, and integrated into the intelligent transportation systems of the future.

"Graphene- and silica-based hybrids can deliver greener, high-performance tyre components."

Leadership, Mentorship, and Institution Building

As Director of SPST and Joint Director of SNSNT, you're wearing multiple leadership hats. How do you balance administrative duties with active research and mentorship?

Balancing administrative leadership with active research and mentorship requires a deep commitment to time management, delegation, and strategic vision. As Director of the School of Polymer Science and Technology (SPST) and Joint Director of the School of Nanoscience and Nanotechnology (SNSNT), I am entrusted with strategic planning, resource mobilization, policy formulation, and day-to-day academic administration. These tasks are time-intensive and require coordination with faculty, students, funding agencies, and industry partners.

However, I am acutely aware that leadership in academia cannot be meaningful if it comes at the cost of disengagement from the laboratory or the classroom. For me, administration is not a departure from research—it is an extension of it, aimed at creating the conditions under which research and teaching can thrive. A capable team of coordinators and faculty leaders enables effective delegation without compromising academic standards. Importantly, I maintain regular interactions with my research scholars and ensure open-door mentoring sessions to foster creativity and accountability.

My leadership philosophy emphasizes shared governance, encouraging faculty and students to take ownership of initiatives. Administrative decisions are grounded in evidence and aligned with research outcomes, thus creating a feedback loop between innovation and execution. I also invest in digital tools and project management systems to streamline communication and task tracking. Collaborative grant writing and joint publications with faculty and students help keep me engaged in frontline science.

At SPST and SNSNT, we have dedicated faculty members and students who modulate both academic and extracurricular matters. My administrative duties, research pursuits, and mentorship responsibilities all converge toward a single goal—to make Mahatma Gandhi University a vibrant hub of innovation in polymer science and nanotechnology.

You've mentored many young scientists and co-published with several. What qualities do you look for in a good mentee, and how do you support their growth?

A good mentee demonstrates curiosity, resilience, and a growth mindset—qualities essential for navigating the ups and downs of research life. I look for individuals who ask questions, challenge assumptions, and are willing to invest time in mastering foundational techniques. Communication skills and ethical rigor are equally critical, as science is as much about collaboration as it is about discovery.

To support their growth, I provide a structured onboarding process that includes lab rotations, literature reviews, and skill mapping. Regular feedback sessions and review meetings help track progress and recalibrate goals. Research can be isolating and stressful, and young scientists often struggle with self-doubt. I try to be approachable and empathetic, reminding them that failure is part of the scientific process. Celebrating small victories, offering reassurance during setbacks, and fostering a culture of peer support are all integral to my approach.

I also expose my students to international workshops, conferences, and exchange programs to broaden their horizons. Importantly, I encourage independent thinking by involving them in project design, grant writing, peer reviewing, and organizing national and international events. Psychological safety is a cornerstone of my mentorship approach—failures are treated as learning moments, not liabilities.


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Several of my students have gone on to become successful academics, industry researchers, and startup founders. While I guide my students, I also learn immensely from them—their fresh perspectives, their embrace of new technologies, and their energy continually rejuvenate me. This symbiotic relationship ensures that mentorship is not just about passing knowledge but about co-creating it. My goal is not just to produce capable researchers but to nurture independent thinkers who will carry forward the torch of sustainable and innovative science.

What is your five-year vision for SPST, and how do you plan to make MGU a polymer innovation hub?

This is a very relevant question. M.G. University has been identified as number one in India by *U.S. News Clarivate Analysis* in the field of Polymer Science and Technology. In this context, to extend our activities in the polymer field, M.G. University started SPST in the year 2023.

Over the next five years, my vision for the School of Polymer Science and Technology is to transform it into a nationally and globally recognized center of excellence for polymer innovation, deeply rooted in academic strength, industrial collaboration, and societal impact. To realize this, our approach is both strategic and inclusive, aligning academic initiatives with industry needs and global sustainability goals. To enhance visibility, SPST will host international conferences, thematic workshops, and publish a quarterly research digest. We will also intensify outreach efforts in schools and communities to raise awareness about plastic pollution and sustainable materials. By embedding sustainability into curriculum, research, and extension activities, SPST will set benchmarks for mission-driven education. The ultimate goal is to position MGU as a knowledge catalyst in the global transition toward circular polymer economies.

A cornerstone of this vision is the establishment and internationalization of the POLYMERA conference series. Conceived as a flagship event, POLYMERA brings together leading researchers, industry experts, policymakers, and entrepreneurs to deliberate on frontier advancements in polymer science and engineering. By institutionalizing this conference annually, SPST aims to become a convergence point for global dialogue and collaboration in polymer research, fostering innovation pipelines that extend well beyond academia. Prof. Sabu Thomas laid the foundation of polymer research in M.G. University. Owing to his contributions, we are starting the Prof. Sabu Thomas Endowment Lecture, to be delivered by an eminent polymer scientist on his birthday, March 14th, every year at SPST. It will help to spread knowledge among students, researchers, and stakeholders.

In parallel, we are committed to bridging the academic–industry divide through a pioneering Executive M.Tech. Program tailored for industry professionals. This program is designed to equip working scientists and engineers with advanced knowledge and problem-solving skills to address real-world challenges in polymer industries. This initiative will not only upskill the workforce but also catalyze joint R&D partnerships between SPST and leading industrial players. We are also planning joint master's programs in specific areas between SPST, leading industries, and foreign universities based on the Academic Bank of Credit system.

"Natural fibers and biopolymers are a roadmap to next-generation green composites."

Recognizing the growing demand for specialized expertise in emerging sectors, SPST is launching a suite of Certification and Skill Development Programs. These include:

- ***Certification Program*** on Polymers in Wastewater Treatment and Water Quality Monitoring Techniques, addressing one of the most pressing environmental challenges with polymer-based solutions.
- ***Skill Courses*** at multiple levels, catering to diverse segments—from students to technical personnel—including: Fundamentals of Rubber and Latex Technology | Advanced Characterization Techniques for Polymers | Tyre Testing Technologies |Advanced Tyre Engineering and Innovation

These offerings are structured to ensure hands-on training, industrial relevance, and certification that enhances employability and technical competence.

Ultimately, through these synergistic initiatives, SPST is poised to become a polymer innovation hub—where cutting-edge research meets impactful application, and where academic excellence translates into real-world solutions. By fostering an ecosystem of collaboration, innovation, and skill development, we aim to make Mahatma Gandhi University a leading force in the global polymer landscape.

Have you initiated or envisioned incubation programs at SPST for student-led or faculty-led tech transfer in bioplastics or rubber composites?

Yes, incubation is a core component of our strategy for the future of SPST, and we have both initiated and envisioned programs to facilitate technology transfer in bioplastics, rubber composites, and related areas. Many of our students have novel ideas in areas like biodegradable packaging, sustainable coatings, or sensor-integrated polymers, but they often lack the infrastructure and guidance to commercialize them. To help them, SPST provides mentoring, prototyping, and pilot-scale trials by partnering with the Business Innovation and Incubation Centre (BIIC) and MG University Innovation Foundation (MGUIF). A few student and faculty projects, including the development of biodegradable cutlery and antimicrobial packaging films, are already in the pre-incubation stage.

We plan to establish a materials validation center with access to ASTM/ISO testing protocols to facilitate certification. IP training and commercialization workshops are offered to sensitize researchers about tech transfer. We are also in discussions with coir and rubber industries to serve as early adopters and beta testers. The incubator model emphasizes sustainability, inclusivity, and local material sourcing. By fostering a culture of entrepreneurial science, we aim to bridge the lab-to-market gap effectively. These efforts will cultivate a new generation of polymer innovators rooted in social and environmental impact.

"We are building an ecosystem where bioplastics, rubber composites, and green polymers move from the lab to the marketplace."


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Global Trends and Future Outlook

The conversation around polymers is often framed in terms of plastic pollution. How do you respond to this, especially as a polymer scientist working on sustainable alternatives?

This is the most relevant question arising in the polymer scenario globally. Plastic pollution is undeniably one of the defining environmental challenges of our era. Images of oceans choked with plastic debris and microplastics infiltrating ecosystems have shaped a global perception of polymers as environmental villains. As a polymer scientist, I acknowledge the environmental crisis posed by unmanaged plastic waste, but I also emphasize that the solution lies in innovation, not vilification.

Polymers have revolutionized healthcare, energy, and mobility; the challenge is to ensure responsible design, use, and disposal. My work focuses on bio-based, biodegradable, and recyclable alternatives that reduce the ecological footprint of polymers. I advocate for life cycle assessments (LCA) and circular economy principles to guide material selection and product design. Public perception often conflates all plastics as harmful, whereas it is single-use, non-recyclable plastics that are the primary concern. Through scientific outreach, I aim to reshape this narrative and highlight the role of green polymers in sustainability. I collaborate with policymakers and NGOs to develop science-informed waste management frameworks. At SPST, we also develop educational modules for schools to build early awareness about sustainable materials. Innovation, regulation, and education must go hand in hand to mitigate polymer-related environmental challenges.

Research in starch-based polymers, PLA blends, and nanocellulose composites are all steps in this direction. My own work has focused heavily on agro-fiber-reinforced bioplastics and nanocomposites that valorize waste and address performance gaps in biodegradable materials. Since Kerala is rich in natural rubber, one of our mottos is to maximize the utilization of NR for high-end applications like automotive industries, aerospace applications, and core biomedical applications. We have already developed biopolymer blends and composites that are ready to replace commercial plastics in many day-to-day applications.

We are also investigating bionanomaterials like nanocellulose and nanochitin to explore their use in high-end applications. Another important mission of SPST is to establish an effective polymer waste management strategy. A pilot plant for safe plastic disposal is being set up at MG University. Research work in this direction is ongoing, focusing on recycling and reusing waste plastic in various areas such as road tarring, building, and other structural applications. The future of polymers lies not in their elimination, but in their intelligent use and responsible disposal.

With innovations like biodegradable films and energy-harvesting nanocomposites, what frontier technologies are you most excited about?

I am particularly excited about multifunctional polymer systems that combine biodegradability with active properties such as wound healing, sensing, or energy conversion. Biodegradable films embedded with antimicrobial agents or plant growth stimulants are redefining smart agriculture. Similarly, our research on piezoelectric nanocomposites is opening up possibilities for self-powered wearable electronics and environmental sensors.

Advances in 3D printing with sustainable polymers are enabling decentralized, customized manufacturing with minimal waste. I'm also intrigued by dynamic covalent networks (vitrimers) that allow reprocessing and reshaping without losing integrity. In packaging, intelligent indicators for spoilage or temperature breaches integrated into biopolymer films are gaining traction. We are exploring biodegradable shape-memory polymers for minimally invasive medical devices.

These frontier technologies expand the functional landscape of polymers beyond structural roles. They exemplify how materials of the future will be not only sustainable but also smart and responsive.

As the coordinator for the upcoming Centre of Excellence in Nanoscience and Nanotechnology at MG University, can you comment on how the centre contribute to advancing research and development in the field of nanoscience?

The proposed Centre of Excellence in Nanoscience and Nanotechnology at MG University is poised to make significant contributions to advancing research and development in the field of nanoscience. With an allocation of Rs. 62 crore for its setup, the centre is expected to enhance research capabilities and foster innovation in nanoscience and nanotechnology. The centre will facilitate collaboration among researchers from diverse backgrounds, promoting interdisciplinary research in nanostructured materials and nanocomposites. Research at the centre will focus on developing innovative materials and devices in nanoscience and nanotechnology, considering ethical, social, and environmental implications.

The centre will have three divisions — the Division of *Polymer Nanocomposites*, the Division of *Nanomedicine*, and the Division of *Social, Ethical, Legal, and Environmental Issues in Nanoscience and Nanotechnology*.

The ***Polymer Nanocomposite Division*** will focus on cutting-edge research and applications of different polymer nanocomposites in various highly demanded sectors such as energy, food, water security, and tyre research. Composites with enhanced sustainability and excellent properties for high-end applications will be developed. We can find several areas of application, including materials science, energy storage, biomedical devices, and many more. We aim to develop an excellent polymer nanocomposite centre where technology will be transferred for the scalability of commercial products.

The ***Division of Nanomedicine*** in the Centre of Excellence in Nanoscience and Nanotechnology aims to develop different types of nanostructured functional materials and polymer nanocomposites for applications in various fields of health and medicine. The major thrust areas of this division include the development of nanobased diagnostic tools for the early detection of life-threatening diseases, site-directed therapy, tissue engineering, and regenerative medicine. Well-experienced and highly proficient researchers on our team focus their research on many cutting-edge areas of biomedical science. A few of the objectives of this research division are:

- Development of nano-based drug carriers for site-directed drug delivery
- Development of biocompatible theranostic systems for cancer therapy
- Development of nanostructured materials and polymer nanocomposites for early detection of tumor markers

- Development of nanosystems for tissue engineering and regenerative medicine applications
- Bioprinting and artificial organ development
- Development of rubber nanocomposite-based medical devices

Our full-fledged laboratories with sophisticated and advanced instrumentation facilities will help accomplish milestones in both basic and pre-clinical research leading to clinical studies. We have many fruitful industrial collaborations that will be helpful for the better implementation of our various biomedical products in markets in the near future.

The ***third division*** of the proposed centre mainly addresses the societal, environmental, and legal implications of nanoscience and nanotechnology research for the sustainable development of the state and the country. It is intended to look into various aspects of waste management through recycling, reuse, and reduction practices in nanoscience and nanotechnology, thereby contributing to a sustainable environment. It also aims to develop policy frameworks or guidelines for the government for nanoscience and nanotechnology-related research, thereby providing direction to researchers and industries for product development.

The Centre of Excellence in Nanoscience and Nanotechnology at MG University will play a vital role in advancing research and development in nanoscience, fostering innovation, and promoting interdisciplinary collaboration.

You've worked across borders—from Germany to Japan to France. What lessons in collaboration and scientific culture would you want Indian academia to adopt?

International collaborations have shown me the value of structured mentorship, data integrity, and cross-disciplinary fluency. One key lesson is the emphasis on planning and documentation, especially in Japanese labs, where protocols are rigorously optimized and followed. German labs exemplify industry alignment and systemic funding support for application-driven research. I believe Indian academia can benefit by fostering more collaborative grant schemes and mobility programs to break institutional silos.

Foreign labs are not afraid to cross boundaries—where chemists collaborate with physicists, and engineers with biologists. But in India, our academic structures are often rigid, with strong departmental boundaries. If we can cultivate a culture that encourages interdisciplinary collaboration, we will unlock enormous creative potential.

Investing in research infrastructure and maintenance, rather than just procurement, is another important takeaway. Peer review, group meetings, and feedback loops are more embedded in Western academic cultures, which improves research quality and reproducibility. Time discipline, lab hygiene, and technical staff training are other areas where global practices can be internalized.

Open-access publishing and data sharing can also boost the global visibility of Indian research. Indian academia is rich in talent and ideas; what we need is a systemic culture that values quality over quantity. Adopting best practices from around the world can make our institutions globally competitive and socially impactful.

Do you foresee biodegradable rubber-based alternatives becoming viable at commercial scale in the next decade, particularly in tyre industry?

The green rubber revolution is not just probable; it's inevitable. The increasing global focus on sustainability has brought significant attention to the development of biodegradable and bio-based rubber alternatives. According to various reports, while there has been encouraging progress in the field of renewable and biodegradable elastomers, the commercial-scale viability of such materials in the tyre industry within the next decade remains limited and conditional.

There have been various advances in bio-based elastomers such as microbially produced polyisoprene, natural rubber from alternative crops (e.g., guayule rubber and Russian dandelion), and chemically modified rubbers designed for improved biodegradability. Researchers are also exploring biodegradable additives, fillers, and green processing methods to further reduce the environmental footprint of tyres. These materials show promise in controlled environments, with improvements in flexibility, elasticity, and partial biodegradability.

However, their performance in critical tyre properties—such as abrasion resistance, mechanical durability, thermal aging, and high-load tolerance—still falls short of the stringent requirements needed for road tyres. The tyre industry presents unique challenges because tyres must remain chemically and mechanically stable under extreme stresses, temperatures, and environmental exposure throughout their service life. Ironically, the very properties that make tyres durable also resist biodegradation. This creates a fundamental conflict between biodegradability and performance that has yet to be fully resolved.

Moreover, current production costs of biodegradable rubbers are significantly higher than those of traditional synthetic rubbers derived from petroleum, which limits scalability and commercial competitiveness. The evidence suggests that full replacement of synthetic rubbers in tyres with biodegradable alternatives is unlikely within the next decade. However, incremental progress is expected—particularly in non-critical components of tyres (such as inner liners, sealants, or temporary-use products)—and through hybrid solutions that blend bio-based materials with conventional polymers to strike a balance between sustainability and performance.

In conclusion, while biodegradable rubber-based alternatives hold great potential and are a growing area of research, their large-scale adoption in tyre manufacturing remains a longer-term goal, likely beyond the next decade. Realizing this vision will depend on breakthroughs in material science, processing technologies, and cost-reduction strategies that enable biodegradable rubbers to meet the uncompromising demands of modern tyres.

What role do you believe polymer scientists must play in shaping environmental policy or public discourse around plastics?

Polymer scientists must serve as both innovators and communicators in shaping the future of materials within an environmentally responsible framework. We have the technical expertise to guide policy decisions on safe, sustainable, and circular material usage. By contributing to standard-setting bodies and regulatory panels, scientists can ensure that emerging materials are evaluated holistically. Developing testing protocols for biodegradable plastics, establishing certification systems, and advising on extended producer responsibility are areas where scientific input is indispensable.


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Dr. Sreekala M.S.

Public discourse around plastics is often emotional and binary; it is our duty to inject nuance and data-driven clarity into these debates. Engagement through science communication platforms, school outreach, and media commentary can demystify polymer science for the lay audience. Collaborating with environmental NGOs and urban planners helps design waste management systems that are technically feasible and socially acceptable.

We must also advocate for R&D funding in biopolymers and recycling infrastructure. In academic circles, integrating sustainability and ethics into polymer curricula can create a new generation of responsible scientists. The polymer community cannot remain isolated from societal concerns; it must be an active, solution-oriented voice in the environmental arena.

Personal Values and Reflections

You've received numerous awards and international fellowships. Which recognition felt most personally meaningful, and why?

Among the many recognitions I have been fortunate to receive during my career, the one that remains most personally meaningful is the **Humboldt Postdoctoral Fellowship** awarded by the Alexander von Humboldt Foundation in Germany. This fellowship was more than just a mark of distinction; it represented a turning point in my academic journey. The Humboldt Fellowship is highly competitive, and what makes it unique is its emphasis not merely on past achievements but on future potential.

Being selected as a Humboldt Fellow was a validation that my ideas in polymer science—particularly in the area of sustainable composites and nanomaterials—had relevance beyond my immediate institutional or national context. It pointed out that my work resonated with the global research community and could contribute to some of the most pressing challenges of our time. On a personal level, the fellowship gave me the invaluable opportunity to work in Germany, immersing myself in a culture of scientific precision, rigor, and interdisciplinarity.

The experience transformed not only my technical skills but also my perspective on how research is conducted, evaluated, and translated into application. The access to state-of-the-art laboratories, the mentorship from the globally respected scientist Prof. Dr. Klaus Friedrich, and the chance to collaborate across borders created an environment that was both intellectually stimulating and deeply humbling.

The community of scholars I became part of through the Humboldt Foundation is a lifelong network of scientists across disciplines and countries. To this day, I remain connected to that network, and the collaborations and friendships built during that period continue to enrich my professional and personal life. The JSPS Fellowship is also equally important and provided me with a rich scientific and cultural experience in Japan.

While every recognition holds value, receiving a place on ***Stanford University's Top 2% Scientists*** list for five consecutive years stands out as deeply meaningful. It gave me encouragement and boosted my scientific temper to think and achieve greater heights. Today, when I mentor my students, I consciously try to provide them with the same blend of rigor and independence, encouraging them to explore boldly while remaining grounded in scientific discipline.

You've often spoken on women in STEM. What barriers still persist for women scientists in India, and how can institutions be better allies?

The progress of women in Science, Technology, Engineering, and Mathematics (STEM) in India is undeniable. We see more women entering universities, securing fellowships, and contributing to research than ever before. Yet, beneath this progress lie persistent barriers that continue to limit the full participation and leadership of women scientists.

Career breaks due to maternity or caregiving often derail research momentum, and re-entry pathways are still limited. Although re-entry fellowships exist, they are still limited in scope and often come too late. Establishing Women in STEM return-to-work fellowships and leadership training programs can bridge existing gaps. Promoting gender-balanced speaker panels, editorial boards, and award nominations sends powerful signals of inclusion.

Institutional support for women is very important to establish them in STEM. There must be structural support for women balancing work and family—accessible childcare facilities on campus, flexible working hours, and policies that allow remote collaboration. Career breaks should not be seen as a liability but as a natural part of life.

Institutions must create networks of senior women scientists who can guide and support younger women, providing role models and advocacy. When young women see leaders who look like them, they are more likely to envision themselves in those roles. Institutions must ensure gender representation on hiring and promotion committees, train evaluators to recognize unconscious bias, and create transparent pathways for advancement among women.

Finally, after more than 25 years in science, what still motivates you each day when you walk into the lab or lecture hall?

Teaching deeply motivates me. Teaching is not just about creating knowledge but about transmitting it, shaping minds, and igniting curiosity. It is a great source of inspiration, and knowledge is not just transferred but transformed. Knowing that our research helps local industries and communities adds purpose beyond publication metrics. Actual research fulfills societal needs, while awards and recognitions serve as milestones.

I am highly interested and motivated in the company of my young research group, where I stay updated with current scientific developments. As a teacher and researcher, I find it very important to motivate and uplift my student community and junior colleagues to become the nourished, motivated academicians and scientists of tomorrow—with a dedicated scientific temper and a vision for a peaceful, developed, and healthy world. I go to the lab or lecture hall keeping this spirit in mind.

After 25 years, my love for science remains undiminished—perhaps even more polished—because it evolves as I evolve.

"Research finds its highest purpose when it serves people, not just publications."

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Formulation giving you headaches?

Rheonic is an Italian engineering company founded in 2015 with a clear mission: to provide consulting services and technical partnerships to the rubber industry in the following areas:

It

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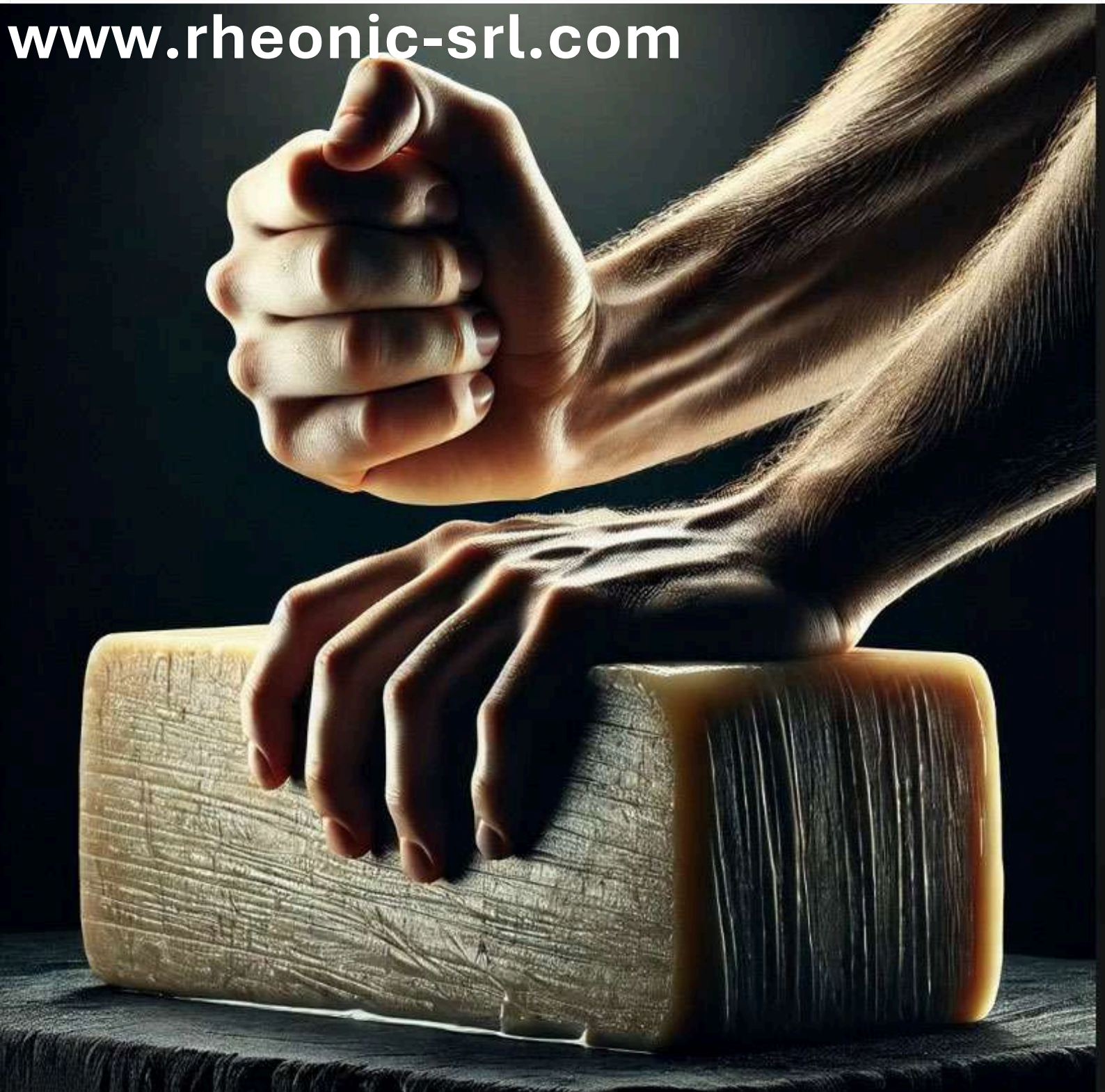

RUBBER Review

Issue 21 | 13-19 Oct 2025

IRMRI Spotlight

INDIAN RUBBER MATERIALS RESEARCH INSTITUTE

Formerly known as Indian Rubber Manufactures Research Association(IRMRA)

An Autonomous Institute, Under DPIIT, Ministry of Commerce & Industry, Govt. of India
254/1B Road No 16V, Wagle Industrial Estate, Thane West, Maharashtra 400604.
Email: info@irmra.org /www.irmri.org/022 6787 3200 (19 Lines)

Indian Rubber Materials Research Institute (IRMRI) formerly known as Indian Rubber Manufacturers Research Association (IRMRA), which was established in 1958 is an internationally well-known Centre of Excellence for providing technological services to both Non-tyre & Tyre sectors.

It is an autonomous institute under the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Govt. of India.

IRMRI Facilities Covers

1. Testing of Polymeric Matrials and Products
2. Research & Development on Rubber & Allied Products
3. Reverse Engineering & Failure Investigation
4. Academic & Sponsored Research
5. ARISE - Incubation Centre
6. Training & Skill Development
7. Industrial Consultancy
8. Third Party Inspection
9. Tyre Testing Facilities - Centre of Excellence

INDIAN RUBBER MATERIALS RESEARCH INSTITUTE REGIONAL CENTRE'S

IRMRI - South Center 1 (Andhra Pradesh)
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IRMRI - South Center 2 (Tamil Nadu)
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Kancheepuram (Dt.)
spdc1@irmra.org

IRMRI - East Center
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IRMRI Team

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Director

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Sr. Deputy Director
South Centre Head

TV Sethumadhavan
Deputy Director

Dr. Debdipta Basu
Sr. Assistant Director
East Centre Head

Dr. Bharat Kapgate
Sr. Assistant Director

Dr. Utpal Basuli
Sr. Assistant Director

Dr. Shibulal Sathi
Assistant Director

Dr. Sheik Mohammed
Assistant Director

V. Karthikeyan
Business Dev. Manager

Dr. T. Vinoth
Sr. Scientific Officer (QMS)

Dr. Amrita Roy
Sr. Scientific Officer

Dr. Mohammed Saleem
Sr. Scientific Officer

Dr. Santosh Jagdale
Sr. Scientific Officer

Ganapathi C
Sr. Scientific Officer

Sachin Barve
Sr. Scientific Officer

Prasant Bankar
Sr. Officer - Safety

Chetan Deshmukh
Sr. Officer (Maintenance & Safety)

Kiran Shetty
Jr. Officer (ESTT)

Hemant Khairnar
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Jr. Officer

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& MINERALS EXHIBITION
OCT 30 - NOV 2, 2025

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PROF. KINSUK NASKAR

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OCTOBER 30TH, THU, 2025

BISWA BANGLA MELA PRANGAN

FOR MORE DETAILS, CONTACT:
DR. DEBDIPTA BASU - 8197606600
Mrs. Reenu Mehra - 9810141681

IRMRI Participation at CII NexGen Mobility Show 2025

The Indian Rubber Manufacturers Research Institute (IRMRI) team actively participated in the CII NexGen Mobility Show 2025 (3rd Edition) held from October 9–11, 2025 at PIECC, Moshi, Pune. The delegation—comprising Mr. Karthikeyan V (Business Development Manager), Mr. Ganapathi C (Senior Scientific Officer), and Mr. Amol (Training Coordinator)—undertook this visit to explore business opportunities, assess market trends in next-generation mobility, and promote IRMRI's R&D and training services.

The event served as a dynamic platform for connecting with OEMs, Tier 1 suppliers, component manufacturers, and mobility start-ups, reaffirming IRMRI's relevance in rubber materials science, compounding, testing, and product innovation. Although the show's main focus was on EV and software technologies, the team identified a strong gap and potential in polymer and rubber component R&D and skill development. IRMRI's technical brochures and presentations received encouraging attention from innovators seeking localized and sustainable mobility solutions.

Key takeaways included the Government's increasing emphasis on R&D, localization, and incubation support for mobility technologies. With its diverse expertise and infrastructure, IRMRI is well-positioned to support India's drive toward self-reliant and sustainable mobility innovation. Through such proactive engagements, IRMRI continues to expand its professional network, strengthen its brand presence, and foster collaboration within the evolving automotive ecosystem.

Visit of Daimler India Commercial Vehicles Officials to IRMRI – SriCity Centre

On 9th October 2025, a three-member delegation from Daimler India Commercial Vehicles Pvt. Ltd. (DICV) visited the Indian Rubber Manufacturers Research Institute (IRMRI) – South Centre, SriCity to explore collaboration opportunities in rubber material testing, compound development, and technical training for the automotive sector. The delegation comprised Mr. Prabhu Venkatesan (General Manager – Head of Central Laboratory), Mr. Dhinakaran Kothandaraj (Senior Manager), and Mr. Anand Mahalingam (Senior Manager).

During the visit, IRMRI officials conducted a guided tour of the institute's state-of-the-art tyre and non-tyre testing laboratories, highlighting its advanced infrastructure, analytical capabilities, and R&D strengths. The DICV team showed strong interest in leveraging IRMRI's facilities for material validation, performance evaluation, and new compound development for automotive rubber components. A key highlight was the demonstration of IRMRI's Rubber Water Dam model, an innovative example of sustainable engineering and eco-friendly material application, which drew special appreciation from the visitors.

The discussions emphasized joint initiatives in green materials, sustainable technologies, and industrial innovation to support next-generation mobility solutions. The visit concluded with a mutual commitment to strengthen cooperation in testing, R&D, and skill development, reinforcing IRMRI's role as a strategic partner in advancing India's automotive and materials innovation ecosystem.

ARISE - ASSOCIATION FOR RUBBER INNOVATION AND START-UP ENTREPRENEURSHIP

Promoted by INDIAN RUBBER MATERIALS RESEARCH INSTITUTE
Formerly known as Indian Rubber Manufactures Research Association
An Autonomous Institute, Under DPIIT, Ministry of Commerce & Industry, Govt. of India
B-88, Road No 24U, Wagle Institute Estate, Thane West, Maharashtra
Email: arise@irmra.org Web: www.ariseindia.net.

ARISE Incubation Centre:

ARISE – Association for rubber Innovation and Start up Entrepreneurship Incubation Centre Promoted by Indian Rubber Materials Research Institute has swiftly developed as a pivotal platform for fostering innovation and entrepreneurship in the rubber and allied industries. With a mission to nurture start-up ecosystems, ARISE is helping aspiring entrepreneurs transform their innovative ideas into viable businesses, especially in the niche domain of rubber products and technologies.

Vision and Objectives

ARISE aims to be the breeding ground for future industrial leaders by providing startups and innovators with the resources, mentorship, and industry-specific expertise they need to succeed. The centre is particularly focused on promoting in rubber and allied industries, encouraging sustainable solutions, and fostering technological advancements that cater to both domestic and global markets.

The centre operates with the primary goal of bridging the gap between academia and industry, by enabling innovation-driven enterprises to evolve from ideation to commercialization. By aligning with national missions like 'Make in India' etc. ARISE plays an active role in building a self-reliant and globally competitive ecosystem.

Support Ecosystem at ARISE

ARISE offers a comprehensive support system, which includes

- *Mentorship and Networking*: The centre facilitates connections with industry experts, academicians, and business leaders, offering startups invaluable mentorship. Startups benefit from the extensive network IRMRI has built over the years, including collaborations with global companies, research institutions, and government agencies.

- *Access to Cutting-Edge Facilities*: ARISE - Promoted by IRMRI, startups at ARISE gain access to advanced R&D labs and testing facilities, enabling product development, innovation, and validation. This is a significant advantage, particularly for startups focusing on rubber technologies, which can quickly iterate and refine solutions.

- *Capacity Building through Training Programs*: ARISE offers a series of workshops and training programs covering diverse aspects of entrepreneurship such as financial management, legal compliances, intellectual property rights, business development, and marketing strategies. These programs will make ensure that entrepreneurs are well-equipped with the necessary skills to navigate the challenges of running a business.

- *Funding and Investment Opportunities*: Recognizing that financial backing is a critical component for the growth of startups, ARISE helps entrepreneurs connect with potential investors and funding agencies. The centre also advises startups on availing government schemes, grants, and subsidies designed for MSME's.

- *Industry Collaborations*: ARISE promotes partnerships between startups and established players in the rubber industry. These collaborations offer startups an opportunity to pilot their innovations, gain market insights, and even secure early customers.

ARISE - ASSOCIATION FOR RUBBER INNOVATION AND START-UP ENTREPRENEURSHIP

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Formerly known as Indian Rubber Manufactures Research Association
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B-88, Road No 24U, Wagle Institute Estate, Thane West, Maharashtra
Email: arise@irmra.org Web: www.ariseindia.net.

ARISE Impact

The centre has already started creating a tangible impact through its flagship Entrepreneurship Development Programme - Conducted from 20th August 2024 till 20th September 2024, the EDP has provided participants with critical insights on topics like HR compliances, funding opportunities, sales strategies, and legal frameworks. This structured training has enabled aspiring entrepreneurs to refine their business models and align their startups with market needs. Participants were motivated to take their ideas forward and register as incubatees under ARISE, thanks to the visionary leader Dr. K Rajkumar, Director, IRMRI, who has been a driving force behind this initiative.

Moreover, ARISE has succeeded in fostering a vibrant entrepreneurial spirit among its participants by regularly inviting experts from sectors such as MSME Mumbai, legal professionals, founders, and chartered accountants to offer personalized guidance and share their experiences. This multi-disciplinary engagement ensures that startups at ARISE are not only technically sound but also business-savvy, ready to scale up their innovations.

ARISE - Future Outlook

ARISE is poised to play a significant role in shaping the future of the Indian rubber industry. With a commitment to fostering innovation and sustainable business practices, ARISE incubation centre is expected to expand its reach by onboarding more startups and diversifying into other sectors allied to rubber.

As the world shifts towards greener technologies, ARISE is well-positioned to lead the way in promoting sustainable and eco-friendly rubber solutions. With its robust infrastructure, expert mentorship, and industry collaborations, ARISE is a beacon of hope for entrepreneurs looking to make a mark in the competitive world for the industries of rubber and allied materials.

In summary, ARISE represents more than just an incubation centre—it's a platform for empowerment, providing entrepreneurs with the tools, resources, and network they need to succeed. Through its visionary leadership and robust support ecosystem, ARISE is truly nurturing the next generation of innovators and business leaders in the rubber industry.

For Details, Please Connect with
V.Karthikeyan, Business Development Manager, IRMRI
Email: veerappan.karthikeyan@irmra.org
9361324212, 7045086164.

Weatherometer

Introduction about Weatherometer : A Weatherometer is a sophisticated laboratory instrument designed to simulate long-term environmental exposure in a controlled setting. By replicating conditions such as sunlight, moisture, and temperature fluctuations, it accelerates the aging process, enabling manufacturers to assess material durability and performance under harsh weathering conditions. This ensures products meet stringent quality standards and perform reliably in real-world applications across various industries. In IRMRI, the Q-SUN Xe-3 machine is used.

Standards and Their Purpose

- ASTM D 4587-11: defines UV and condensation testing procedures to assess paint and coating durability under weathering.
- ASTM G 151-10: guides accelerated weathering tests using artificial light for plastics and other materials.
- ISO 4892-2: Outlines xenon-arc exposure methods for plastics and coatings to simulate sunlight and weathering effects.
- ISO 16474-2: Defines xenon-arc testing protocols for paints and varnishes, focusing on UV resistance and color stability.
- ISO 105-B02: Tests color fastness of textiles under artificial light, simulating sunlight exposure.
- ISO 105-B04: Evaluates textile color fastness under artificial weathering, including UV and moisture.
- ASTM 750-12: Standard Practice for Rubber Deterioration using artificial weathering apparatus.

Uses and Benefits: The Q-Sun Xenon Test Model Xe-3 measures color fading, gloss retention, surface degradation, mechanical strength, and flexibility in materials such as rubbers, plastics, coatings, paints, leather, and textiles under UV light, moisture, and temperature cycles, by ASTM and ISO standards. It predicts long-term performance, identifying issues such as cracking or discoloration, thereby benefiting industries like automotive, textiles, coatings, plastics, and leather by ensuring durable, high-quality products.

Sectors Benefits: Rubber, textiles, paints &coatings, plastics, and leather industries.

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Location: 254/1B Road no 16 V, Wagle Industrial Estate, Thane, Maharashtra 400604 India

TechnoBiz

China Rubber

BUSINESS DIRECTORY

中联橡胶股份有限公司

CHINA UNITED RUBBER CORPORATION

Qingdao Zhongyi Weiye Machinery Manufacture Co., Ltd.

Qingdao Zhongyiweiye Machinery Manufacture Co., Ltd. was established in 1997 and is a professional equipment manufacturing enterprise that integrates research and development, manufacturing, and sales services.It has obtained multiple product patents and technical certificates, and has passed ISO9001 quality management system and ISO14001 environmental management system certifications in management. It has been awarded the title of "Qingdao Specialized, Refined, and New Technology" enterprise.

Yarn braiding machine

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Website: www.zhongyiweiye.cn

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Jiujiang DoWell Rubber Technology Co., Ltd.

DoWell Tech is dedicated to the R&D, production and sales of chemical raw materials, and provides expert advice on their application solutions for our global customers.

Our core products are primarily divided into **acrylic rubber (ACM)** and modified acrylic water-based adhesives. ACM products are classified into four major types of rubber products: i. e. active chlorine, carboxyl, double cross-linking and epoxy types, while the and water-based emulsion adhesive types are available in five different categories which are broadly used in industries such as automobile, new energy technology, electric power , and related electronics, and environmental protection.

We are committed to product R&D and continuously manufacturing products which are consistently reliable, stable, and environmentally friendly, to meet our customers' evolving needs. This commitment is reflected in our corporate motto or mission of becoming a:

"Leading innovative material manufacturer and innovation through cutting edge technology, to ensure serving a sustainable development of society."

We pledge to be a model corporate citizen, a trusted partner, and an honest, reliable enterpriser that fosters long-term relationships with our customers worldwide while helping our customers to create value.

Contact Us

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E-mail: steven.yang@dowellacm.com

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7)Rubber preformer
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9)Silicone production line;
10)Waste gas treatment system, etc.

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Wuxi Double Elephant Rubber & Plastics Machinery Co., Ltd

双象集团
DOUBLE ELEPHANT GROUP

公司介绍 Company introduction

Wuxi Double Elephant Rubber & Plastics Machinery Co., Ltd （DE） affiliated with Jiangsu Double Elephant Group, covering an area of 100, 000 square meters , with over 40 years of history , is a modernized technology enterprise which is engaged in R&D, manufacture and sales and after-sales service in the field of Rubber & Plastics Machinery .

We are specialized in the production of rubber and plastics machinery equipment: calender and auxiliary machine series, open mill series, mixing kneader series, rubber extruder series, rotary curing series, wide rubber sheet extrude calendering line, rubber conveyor belt calendering line, tire inner liner calendering line, PVC artificial leather/ film/rigid sheet calendering line, PVC flooring calendering line etc.

Our Products are very popular in China and have been exported all over the world, such as Europe, the United States , Japan, Southeast Asia, India, Turkey, South America, etc. In rubber machinery field, DE has established a good partnerships with domestic R&D institute , large scale tire enterprise, rubber product manufacturers such as Beijing R & D Institute of Rubber Industry , Guiling rubber industry R&D institute, Bridgestone (Japan), Toyo Tire (Japan), Yokohama(Japan), Continental Tire (Germany),Michelin (France), Trelleborg (Sweden),Camso(Canada),Kumho Tire (Korea), Apollo(India),MRF （India） ,CST Tire(Taiwan), Kenda Tire(Taiwan),Linglong Tire, Triangle Tire, General Science Technology, Wanli Tire, Boton Technology , etc.

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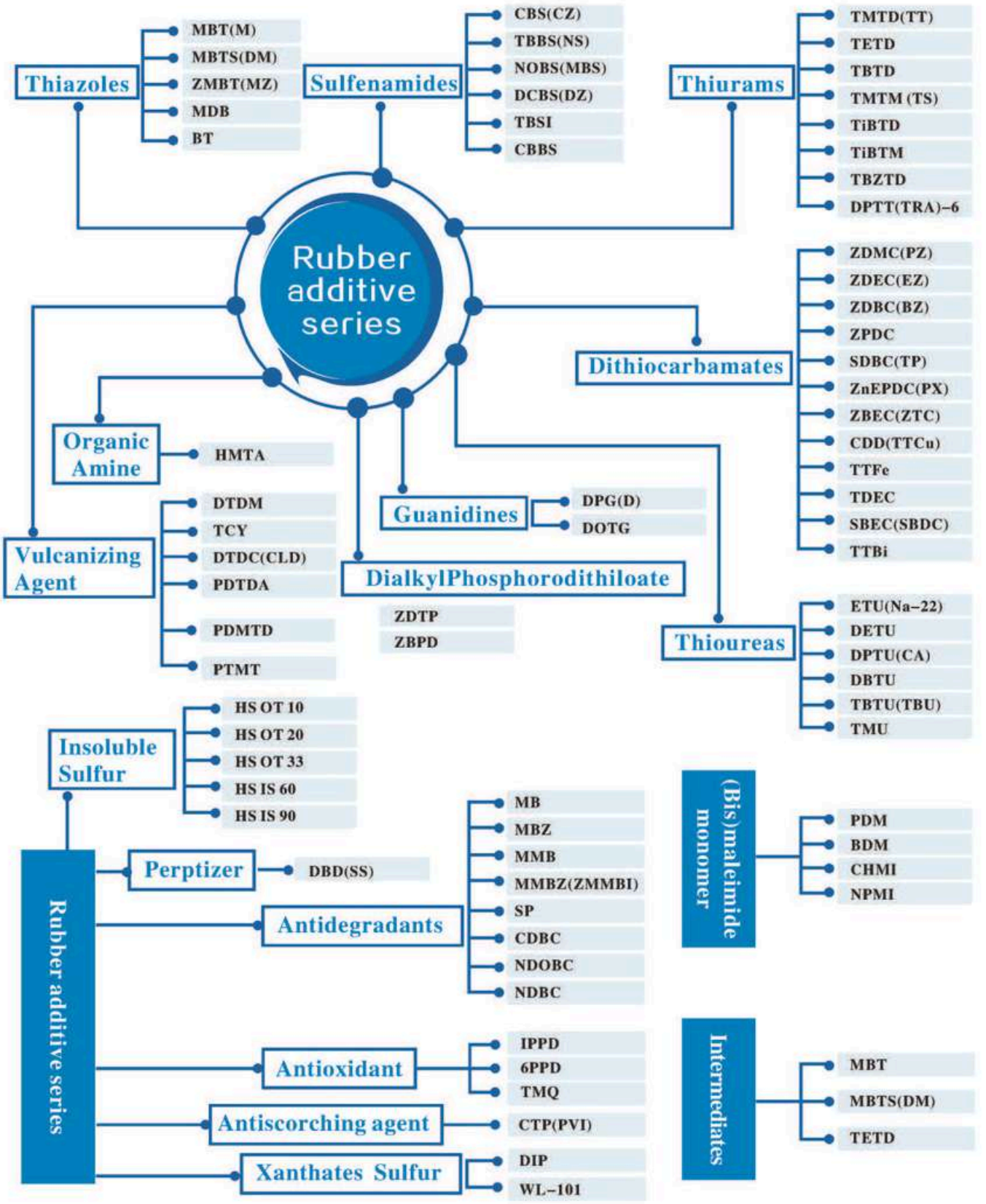

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MOB：+86 158 3936 2818
Email: walter@willingchem.com
Url: www.willingchem.com

QINGDAO XIANG RUN HAO IMPORT AND EXPORT CO.,LTD

XIANG RUN HAO

About Us

QingDao Xiang Run Hao Import and Export Co., ltd (Former name is Qingdao RuiTongFa rubber machinery works, which is founded in 2003) is a professional manufacturer for rubber machinery and rubber moulds such as rubber injection machine, vacuum plate vulcanizing press and automatic plate vulcanizing press, rubber joint machine. We exported rubber machine and rubber moulds to many countries such as India, Chile, Belarus, South America, South korea, South-East Asia, Japan and Russia etcs.

The total export amount is up to more than ten million US dollars.

Through many year's development, constant research and inovation, we became a bigger company with several factories to producing Automatic Vulcanizing Machine, Rubber Injection Molding Machine, Mixing Mill kneader, many kinds of rubber moulds and rubber products. We also supply technology service, rubber compound formula and moulds designing according to custmers requirements and production samples. We wish to co-operate with all customers on the basis of equality and mutual benefit.

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We dispatch our technicians were on site to supervise installation and train their worker. The machine are received good remarks from our Chilean customers.

Web1: www.xiangrunhao.com **Web2: https://rubbermachineryltd.com** **Email1: ruitongfafa888@163.com**

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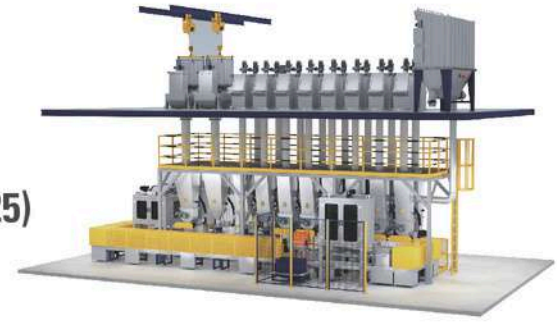

Beijing Mach Tiancheng Technology Co., Ltd.

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E-mail: kitty@machtech.com.cn **Website**: www.bjmachtech.com

TechnoBiz

India Rubber

BUSINESS DIRECTORY

A Supplement of RUBBER Review

Aarti Steel International Ltd.

- **Tire Bead Wire – 42000 MT PA (0.80 mm – 2.40 mm)**
- **Spring Steel Wire & Galvanized Wire – 36000 MT PA (0.25 mm – 6 mm)**

Aarti Steel International Ltd. is a flagship company of Aarti Group of industries having business interest in producing steel products like high carbon steel wires and textile. The total turnover of the group is around Rs. 3000 Cr. The company was established in 1979 in Ludhiana which steadily emerged as one of the leading manufacturer of carbon and alloy steel with state-of-the-art technology plant located in Punjab.

In 1992, the company put up its steel wire drawing unit in Ludhiana which later on emerged as one of the leading manufacturer of high carbon steel wire in India with capacity of 78000 MT per annum.

Aarti International Ltd.
G.T. Road, Miller Ganj, Ludhiana - 141 003, (Punjab) India
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- Latex Film Dewebbers
- Latex and Coagulant Wetting Agents
- Chemicals for Powder Free Gloves
- Polymer Coatings for Gloves
- Powder Free Coagulant/Anti-tack
- Powder Reducing Agents
- Former Cleaners and Biocides

- Aqueous Colour Pigment Dispersions
- Wax Emulsions
- Specialty Silicone Emulsions and Derivates
- Silicone Oil (Dimethicone)
- Silicone Defoamers
- Chloroprene Latex
- Polyisoprene Latex
- NBR (Nitrile) latex

RACHANA

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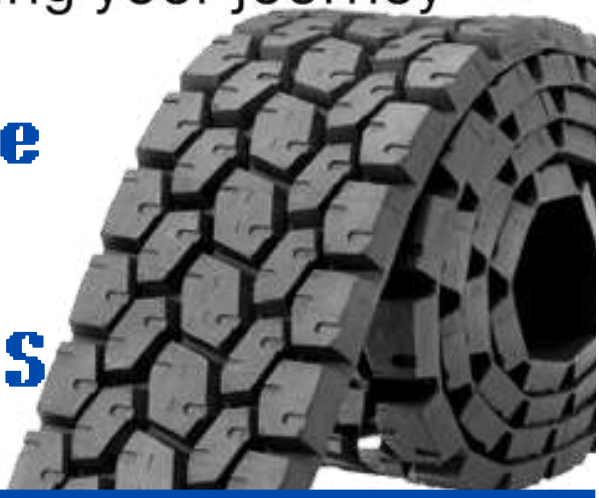

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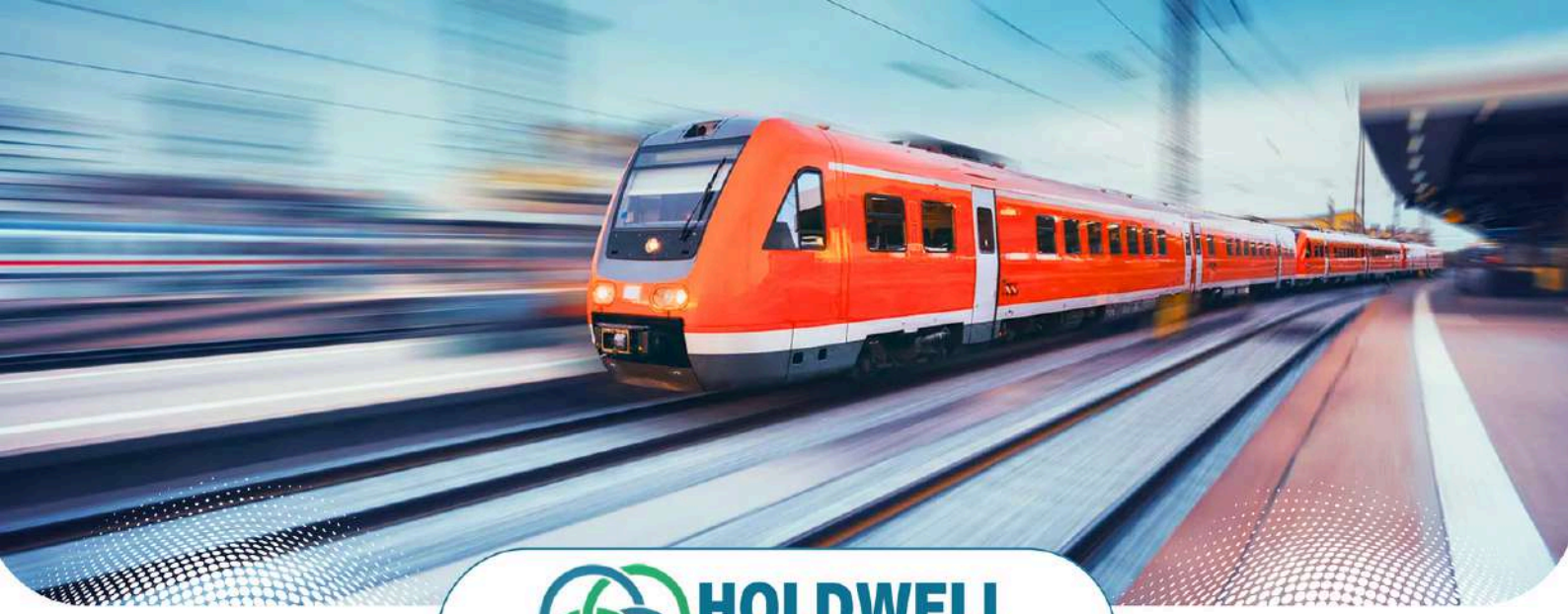

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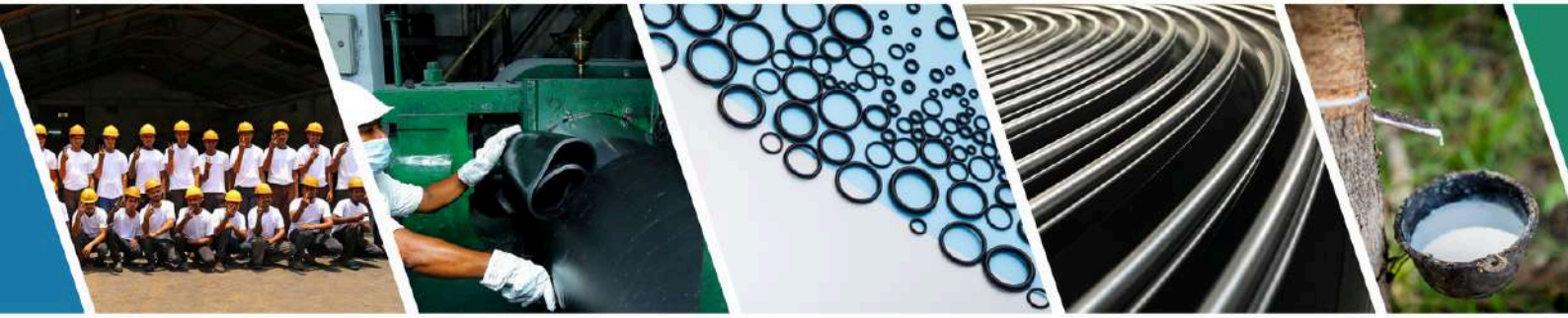

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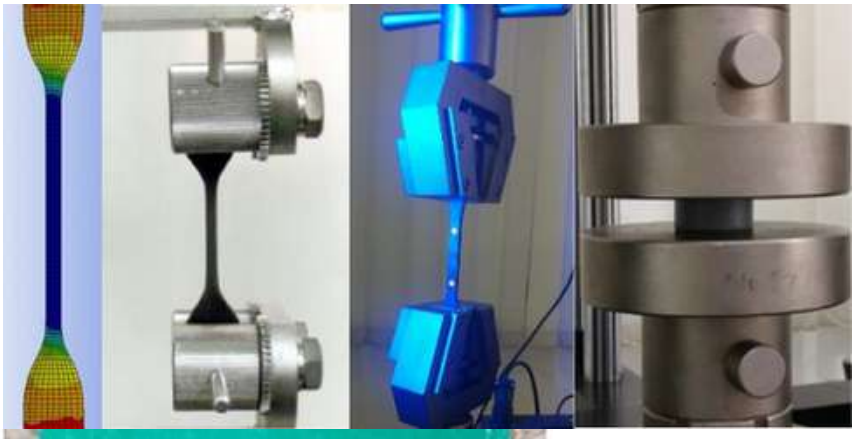

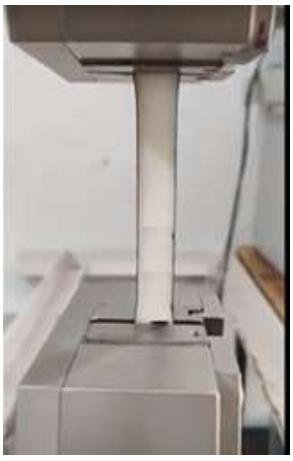

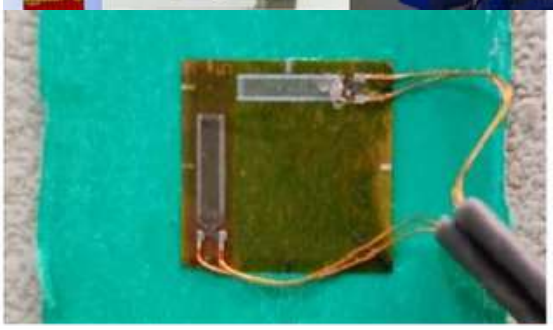

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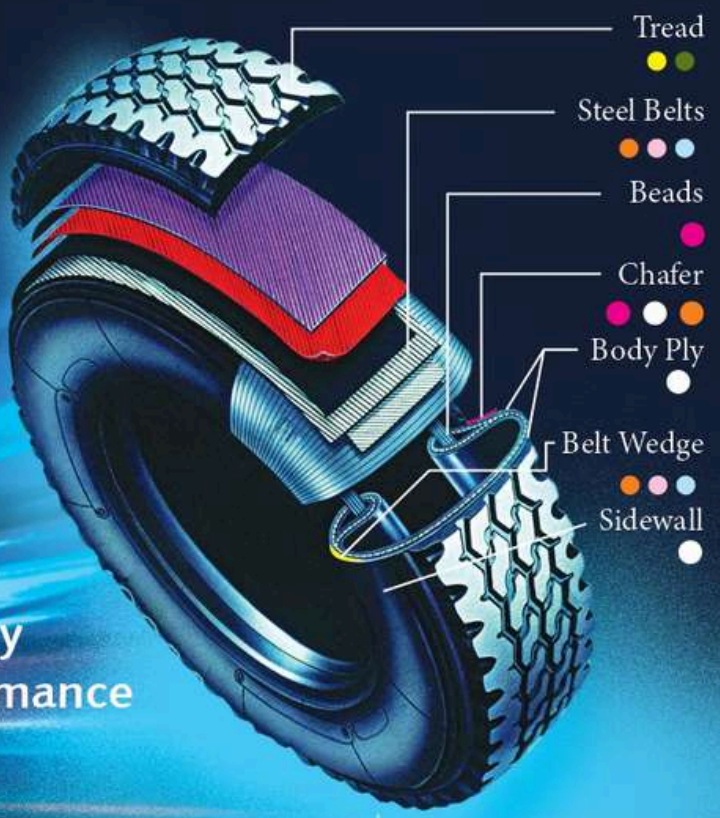

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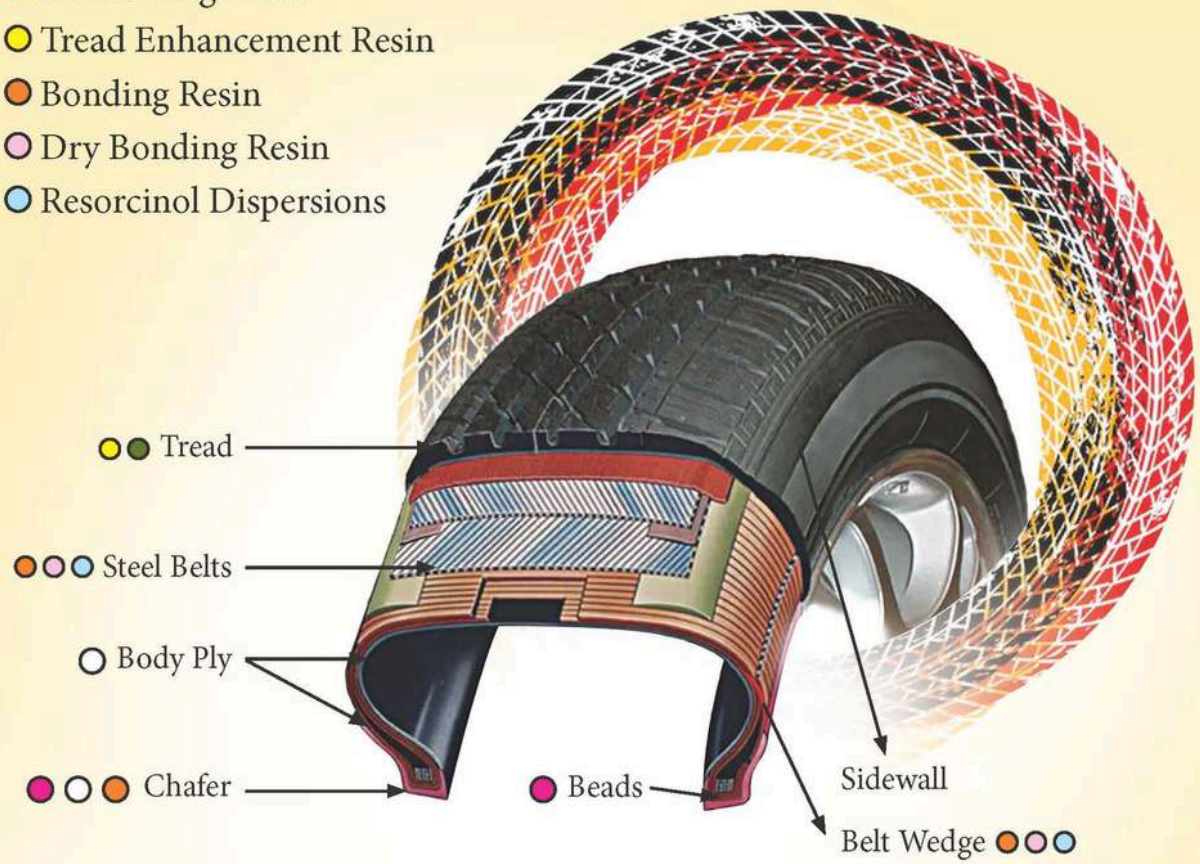

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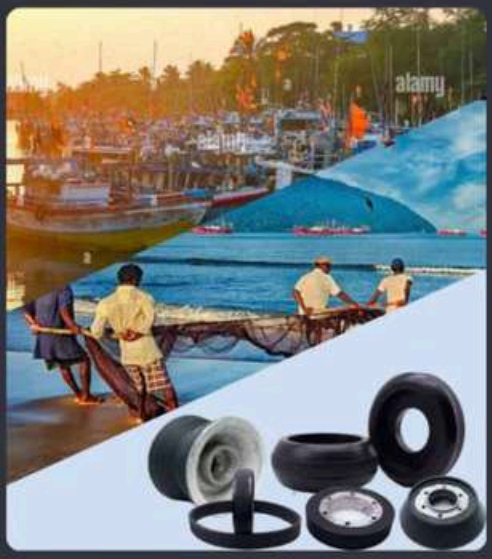

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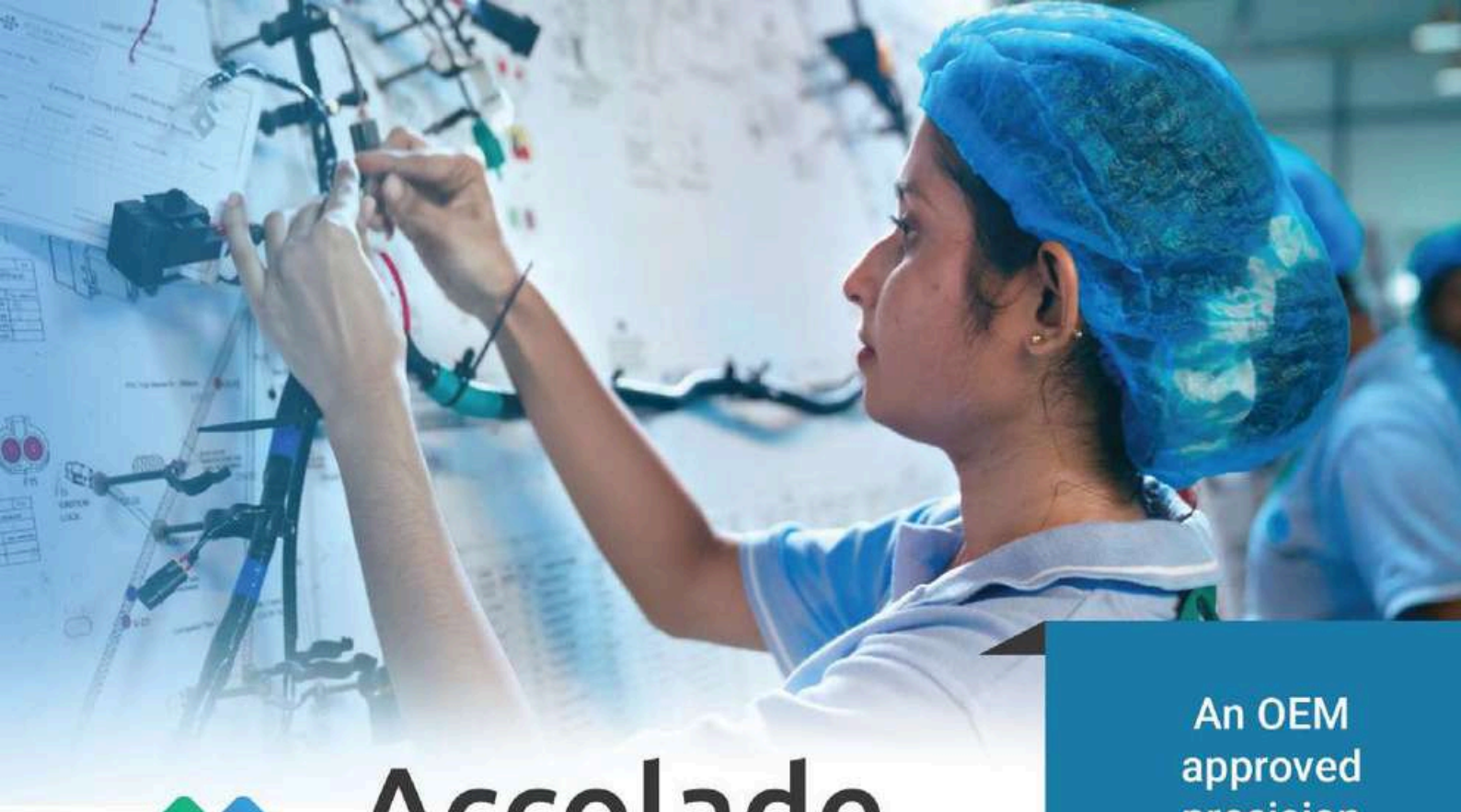

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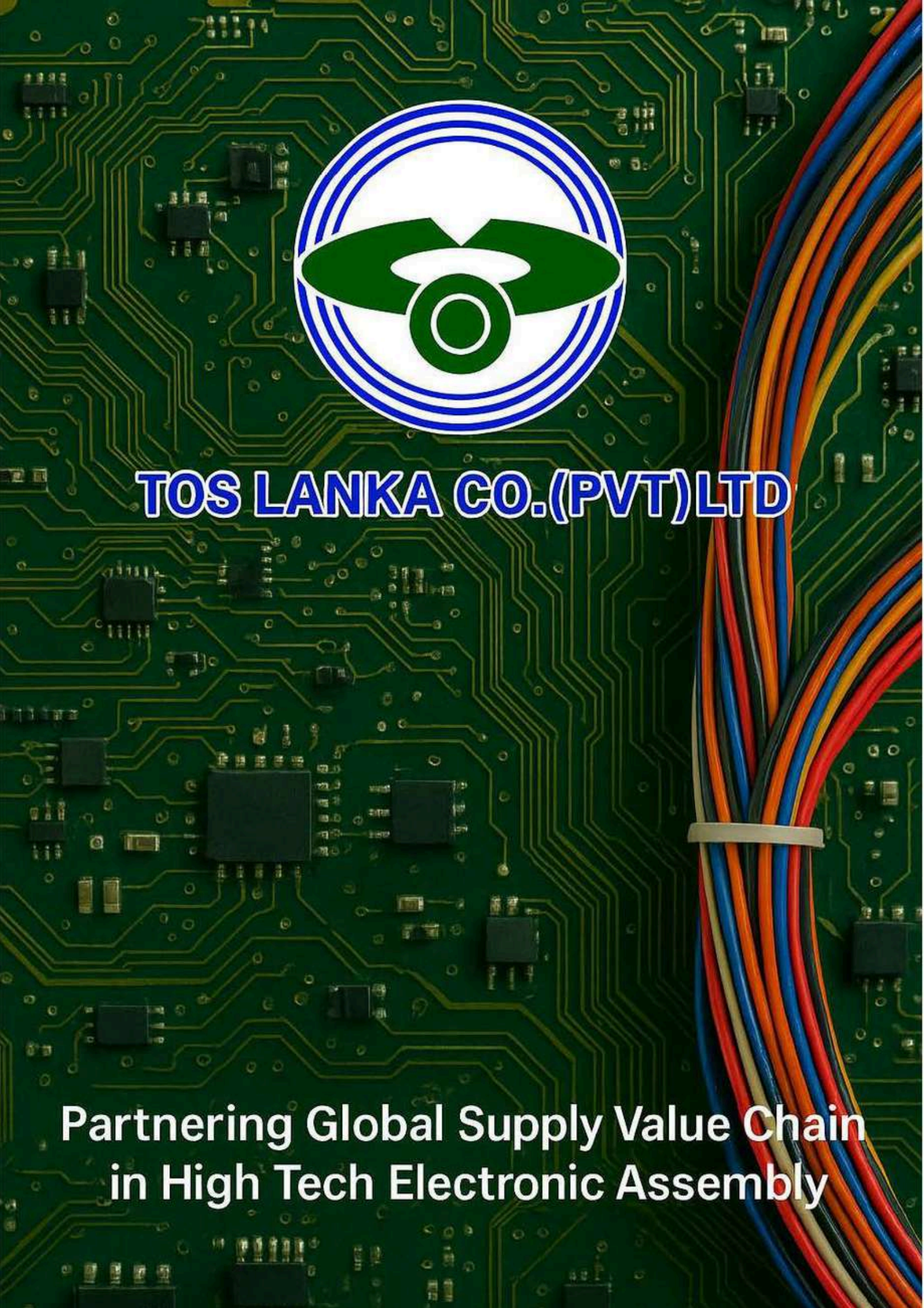
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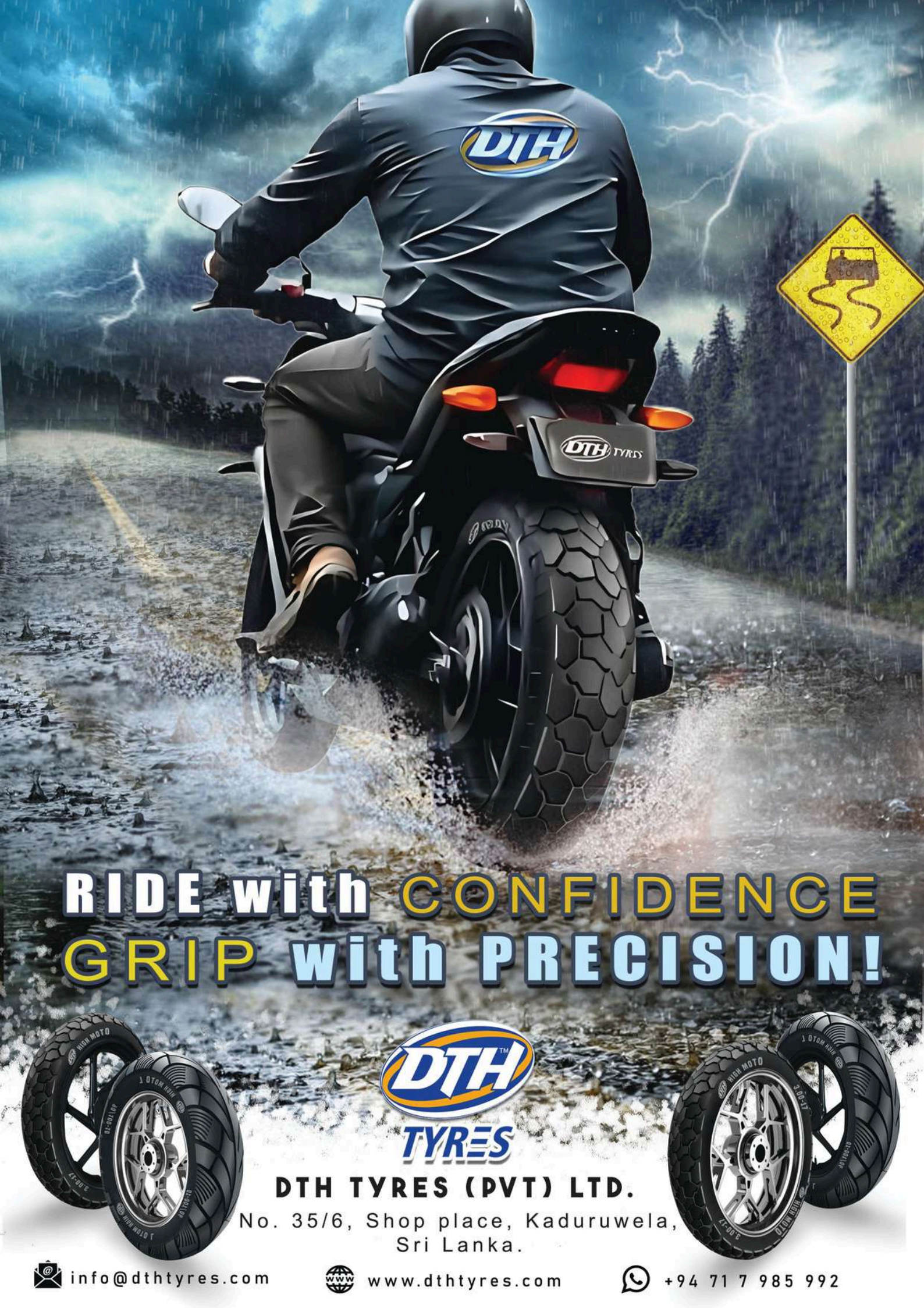
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RUBBER Review

Renewa'25 – National Workshop on "Next-Gen Polymers for Advanced Applications" Concludes Successfully at MIT, Anna University

The Department of Rubber and Plastics Technology (RPT) and the Society of Plastics and Rubber Technologists (SPART) at MIT Campus, Anna University, Chennai, successfully concluded the Renewa'25 National-Level Workshop on "Next-Gen Polymers for Advanced Applications." The event served as a vibrant platform for knowledge exchange and industry–academia collaboration, bringing together leading experts and aspiring polymer professionals from across the country.

The inauguration was graced by Mr. Amarnath SKP (Vice President – Global R&D Asia, Apollo Tyres Ltd.), who served as the Chief Guest, and Dr. P. Jayashree (Dean, MIT Campus) as the Special Guest. The workshop featured an inspiring lineup of technical sessions, including Mr. Amarnath SKP on "Driving Sustainability in Tyres," Ms. R.M. Suguna Lakshmi on "Exploring 3D Printing Technologies for Next-Gen Polymer Applications," Mr. Peram Prasada Rao on "Shaping the Future: How to Excel as a Polymer Professional," Dr. Jaisankar S.N. on "Morphology and Rheology of Polyurethane Nano Composites," and Dr. D. Sathia Narayanan on "Polymer Composites in Marine Applications."

With enthusiastic participation from students, faculty, and industry professionals, Renewa'25 highlighted the growing importance of innovation, sustainability, and skill development in the polymer sector. The organizers extended heartfelt thanks to all speakers, participants, sponsors, and the dedicated SPART student team for making the event a resounding success.


ANNA UNIVERSITY


SPARTANZ

Cabot Corporation Strengthens Manufacturing Capabilities in North America for Circular Reinforcing Carbons Powered by its EVOLVE® Sustainable Solutions Technology Platform

Cabot Corporation (NYSE: CBT) announced that it has enhanced its manufacturing capabilities in North America for circular reinforcing carbons powered by its EVOLVE® Sustainable Solutions technology platform. With this milestone, Cabot's site in Ville Platte, Louisiana, USA joins Mauá, Brazil and Valasske Mezirici (Valmez), Czech Republic as manufacturing locations with demonstrated circular reinforcing carbons production capability. The circular reinforcing carbons are made using tire pyrolysis oil (TPO) derived from end-of-life tires that leverage an International Sustainability & Carbon Certification (ISCC) PLUS mass balance approach. Furthermore, Cabot has expanded its global network of ISCC PLUS certified sites to 14 facilities, enhancing the supply of certified sustainable solutions while advancing the company's commitment to a circular, sustainable economy.

Across the globe, tire manufacturers have established ambitious sustainability goals, with many aiming to achieve 40% sustainable material usage in total tire production by 2030 and 100% by 2050. In support of these goals, there is a growing interest in circular solutions, including Cabot's TPO based circular reinforcing carbons, which serve as a drop-in replacement for traditional carbon black, enabling manufacturers to boost the sustainable content of their products without compromising performance. By broadening its circular reinforcing carbons manufacturing capabilities in North America, Cabot is strengthening supply chain efficiency through its "make-in-region, sell-in-region" approach, while significantly reducing transportation-related emissions across its value chain – furthering its commitment to environmental sustainability.

"*As a leader and innovator in our industry, we are continuously enhancing our technology and manufacturing footprint to enable our customers to meet their sustainability objectives – now and into the future*," said Aatif Misbah, vice president and general manager, Sustainable Solutions, Reinforcement Materials segment. "With the expansion of our manufacturing footprint for circular reinforcing carbons under the recovered category of our EVOLVE Sustainable Solutions technology platform, we are well-positioned to continue to deliver scalable solutions that help drive progress toward a more sustainable world. As we advance in our own sustainability journey, we will continue to refine our efforts to ensure our offerings support the dynamic priorities of the industry."

As part of its commitment to advancing circularity and traceability, Cabot has also expanded the number of ISCC PLUS certified sites across its global network, strengthening its capacity to offer customers third-party certified sustainable solutions with reliable performance at industrial scale. Cabot currently has 12 certified sites supporting its reinforcing carbon portfolio across Europe, the Americas and Asia as well as two certified masterbatch and compounding sites in Europe. ISCC is a globally applicable certification system designed to ensure compliance with ecological and social requirements, greenhouse gas emissions savings and traceability. Mass balance accounting is a chain of custody approach designed to trace the flow of materials through a complex value chain, including recycled feedstock at plants. Mass balance can be a key lever to accelerate the substitution of fossil raw materials and scale-up the use of recycled materials within existing infrastructures.

Graphene Nanotube ESD Chemical Gloves: A Game-Changer for Safety and Comfort in PPE

Nastah Industries, Malaysia's leading manufacturer of industrial and household rubber gloves, has unveiled a groundbreaking advancement in PPE: ESD chemical gloves enhanced with TUBALL™ graphene nanotubes. Designed to prevent static discharge while resisting chemical and physical hazards, these gloves set a new standard for safety and reliability across industries from chemical processing to electronics manufacturing.

"Integrating OCSiAl's graphene nanotubes into our gloves allows us to achieve triple protection: anti-static performance, mechanical strength, and chemical resistance —all while ensuring comfort and aesthetic appeal," said Dr. Chan Wai Hoong, Head of R&D at Nastah Industries Sdn Bhd.

Graphene nanotubes, also known as single wall carbon nanotubes, are one-atom-thick graphene sheets shaped as tubes approximately 1.6 nm in diameter and over 5 µm long. This unique morphology enables them to form a 3D conductive and reinforcing network within a material.

"With an easy-to-use TUBALL™ water-based dispersion, which contains just 0.5% graphene nanotubes, the gloves achieve a surface resistivity of 10^8 ohm/sq, even with a cotton lining, providing long-lasting ESD protection while maintaining resistance to abrasion, chemicals, and tears, thereby extending their lifespan and reliability," said Eugene Tan, SEA Sales representative at OCSiAl.

As global demand grows for durable, high-performance, reusable PPE, Nastah's innovation focuses on every detail that matters. These advanced gloves combine long-lasting safety with exceptional comfort and feature touchscreen compatibility—perfectly suited for today's connected, tech-driven workplaces. The soft cotton flock lining enhances comfort and sweat absorption, ensuring comfort through even the longest shifts.

Certified under EN 16350, EN 374, and EN 388, Nastah's graphene nanotube-enhanced gloves are set to launch by the end of this year. To learn more and request a demonstration, visit OCSiAl and Nastah at A+A in November in Düsseldorf, Germany, this fall.

Gummiwerk Kraiburg develops new series of high-performance FKM compounds

Waldkraiburg, Germany – Gummiwerk KRAIBURG GmbH & Co. KG has developed a new series of high-performance FKM compounds under the name KRAIBURG Fluor. These compounds intended for use in technical applications that demand excellent resistance to high temperatures and aggressive media. The result is an outstanding combination of material performance and economic efficiency.

The KRAIBURG Fluor series offers excellent resistance to temperature and aggressive media, along with strong aging, ozone and UV resistance, ensuring long-lasting components even under the most challenging operating conditions. Suitable for a wide range of industries – including automotive applications such as O-rings, fuel systems, seals and shaft seals, the chemical industry, for seals exposed to aggressive media, aerospace, for high-temperature sealing solutions and the oil and gas sector, for components in contact with fuels and lubricants.

KRAIBURG Fluor FKM compounds are available in black as standard; other color variants can be provided upon request. Delivery forms include calendered sheets and plates, endless feeder strips, extruded strips and granules for further processing.

The materials can be processed using conventional manufacturing methods such as Compression Molding (CM), Transfer Molding (TM), Injection Molding (IM) and extrusion (for special types). In addition, all compounds are fully compliant with REACH, RoHS, and PFHxA (< 25 ppb) requirements.

With KRAIBURG Fluor, Gummiwerk KRAIBURG offers a high-performance and economically efficient solution for manufacturing long-lasting components in demanding applications.

Jay Dhillon named as President of BKT USA

Copley, OH – Balkrishna Industries Ltd, commonly known in the industry as BKT, officially announces the appointment of Jay Dhillon as President of BKT USA. With this appointment, the multinational company reaffirms its commitment to strong leadership by building on the core values that have made BKT a recognized leader in the U.S. market for innovation and quality, which distinguish its products.

Bringing over 20 years of global leadership experience in the tire industry, Jay Dhillon will lead the BKT subsidiary in Ohio, U.S., to further grow the company's presence in the Off-highway tire market. He will focus on guiding BKT's long-term growth strategy, expanding its presence in new and existing markets, and ensuring the company consistently upholds its vision and values in the U.S. market. In this role, Jay Dhillon will oversee the leadership team to align all business units with the company's strategic goals, while also building strong and profitable strategic partner relationships to position BKT for sustainable growth and continuous industry leadership.

"I am excited to join the BKT team and contribute to its forward-looking growth. With over 20 years in the tire industry and an engineering background, my goal is to lead the team and drive success during this dynamic time while upholding the company's commitment to quality, innovation, and excellence," says Jay Dhillon, President, BKT USA. Under Jay Dhillon's leadership, BKT looks forward to growth in the U.S. market by building on a strong foundation of quality, reliability, and customer trust. With his leadership, the company will continue to expand its market presence, strengthen its product offerings, and drive initiatives that support both employees and customers. Looking ahead, BKT is dedicated to providing exceptional value, encouraging innovation, and preserving its status as a trusted leader in the Off-highway tire sector.

Further to Jay's appointment, effective October 1st 2025, Mr. Minoo Mehta will be appointed as Senior Advisor for Truck and Bus Radial tires business of BKT, thus supporting and strengthening the company's strategy across this segment in the U.S. market, the new business area recently announced by BKT as part of its strategic roadmap to 2030, that will lead to development and launch of new product lines.

Balkrishna Industries Limited extends its heartfelt gratitude to Mr. Minoo Mehta for his unwavering dedication and outstanding contribution to the growth and success of BKT USA. His vision, leadership, and commitment have played a pivotal role in strengthening the company's presence in the U.S. market, contributing to build a solid reputation. These changes will pave the way for the next phase of growth for BKT, confirming its strong ambitions to expand the company's horizons towards new segments in strategic global markets.

EcoVadis ranks Evonik among the world's most sustainable companies

Essen, Germany. This year, sustainability rating agency EcoVadis has awarded Evonik a Gold rating for its performance in sustainability. With this recognition, the chemicals company ranks among the top five percent of companies assessed by EcoVadis worldwide over the past 12 months.

"*The Gold rating is a strong signal of our consistent commitment to sustainability,*" says Thomas Wessel, Chief Human Resources Officer and Labor Director from Evonik and responsible for sustainability. "This rating clearly demonstrates what we can achieve when we live and shape sustainability together."

EcoVadis evaluates corporate performance across four categories: Environment, Labor & Human Rights, Ethics, and Sustainable Procurement. In addition to internal company data, publicly available information is also considered. The expectations placed on companies continue to rise—especially in light of evolving regulations and stakeholder demands.

"*Sustainability is a continuous improvement process that we actively shape together with our stakeholders,*" emphasizes Ralf Düssel, Head of Sustainability at Evonik. "We are working to optimize our own processes while maximizing the positive impact of our products in our customers' applications."

Evonik is a founding member of the industry initiative Together for Sustainability (TfS), which promotes standardized sustainability criteria and audits across global supply chains. The renewed Gold rating from EcoVadis underscores the effectiveness of this strategic partnership and Evonik's role as a pioneer in sustainable supply chain management within the chemical industry.

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ContiTech Launches Production at New Hydraulic Plant in Aguascalientes

Continental's group sector ContiTech has officially started production at its new hydraulics manufacturing facility in Aguascalientes, Mexico. The $90 million investment represents a major step in the company's strategy to strengthen local supply chains, increase regional production capacity and bring innovative fluid power solutions closer to customers in the region. The new 900,000 square feet site will manufacture high-performance hydraulic hoses for a wide range of industrial and mobile applications, including construction, agriculture, mining and energy sectors.

"*The start of production in Aguascalientes marks a key milestone in ContiTech's journey toward being a more agile, regionalized partner to our customers*," said Philip Nelles, Member of the Continental Executive Board and CEO of the ContiTech group sector. "At ContiTech, we build on 150 years of materials expertise. While our portfolio is broad and diverse, all our solutions are grounded in the same strength: high-performance materials that are mission critical, innovative, and engineered to perform. Whether they connect, convey, or cover, our products play essential roles across industries and applications."

"We are ready to lead in this segment. This new plant reflects our commitment to both innovation and proximity," said Andreas Gerstenberger, CEO of ContiTech USA and Head of Business Area Industrial Solutions Americas. "With our customers increasingly looking for responsive and innovative solutions, we are proud to deliver with local production, advanced technology, and a skilled workforce. More than just expanding our footprint, this investment is about creating mutual value with our customers, partnering closely to help them succeed in their own markets. By placing customer needs at the center of everything we do, we aim to be their first choice for material-driven solutions, now and in the future."

The Aguascalientes plant will work in close alignment with ContiTech's existing manufacturing facility in Norfolk, Nebraska, offering production flexibility, increased responsiveness and operational efficiency. Together, the two locations will help ContiTech meet the ever-changing needs of customers by balancing volume, technology, and lead time across a coordinated regional network. The plant opening reinforces ContiTech's long-term focus on growth in key markets through investment in local infrastructure, talent and technology. The company plans to ramp up production gradually, with customer deliveries expected to begin in Q4 2025.

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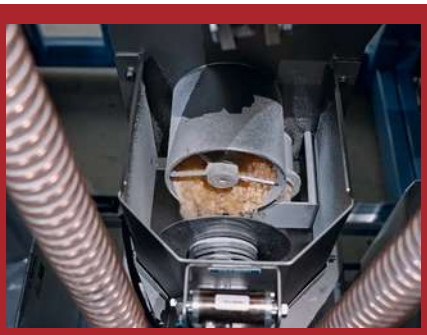

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- Rubbers and Rubber Composites Innovations for Unexplored and Sustainable Applications
- Advanced Rubber Solutions for Global Warming Challenges
- Smart, Intelligent and Functional Rubber Materials
- Natural Rubber, Bio-based Rubbers and Rubber Chemicals
- Progress in Rubber Analysis, Testing and Standards
- Safety and Environmental Impact of Rubber Products
- Recycling and Circular Economy in the Rubber Industry

KEY ACTIVITIES

- Technical Conference Program
- Natural Rubber Symposium
- Technology Exhibition
- IRCO Student Award
- Networking Gala Dinner
- NR Factory Visit

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PROGRAM SCHEDULE

Detailed technical program of IRC 2025 will be updated soon. The time schedule for each day for technical presentations is 9am to 5pm.

Please check website www.irc2025.com for upto date information.

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Plenary Presentations

- **AI-driven Research and Multi-scale Simulation of Elastomer Materials** | *Prof. Liqun Zhang, Xi'an Jiaotong University, China*
- **Sustainable Materials for Tyre Engineering** | *Prof. Sabu Thomas, Mahatma Gandhi University, India*
- **Sustainable Mobility 2030 and beyond – Role of Tyre and Rubber Industry** | *Dr. R Mukhopadhyay, JK Tyre & Industries Ltd., India*
- **Circular Economy - Limits and Chances in Rubber Recycling** | *Prof. Ulrich Giese, German Institute for Rubber Technology, Germany*
- **Crack Resistance and Beyond: Fracture Mechanics in Strain Crystallizing and Liquid Crystal Elastomers** | *Prof. Kenji Urayama, Kyoto University, Japan*

Keynote Presentations

- **The Crosslinking Dilemma in ENR: Evaluating Sulphur and Di-acid Networks for Future-Ready Rubber Products** | *Dr. Amit Das, Leibniz Institute of Polymer Research Dresden, Germany*
- **On the path to make a black magic green – how to minimize the the CO2 footprint of rubber products** | *Prof. Andreas Limper, Institut für Kunststoffverarbeitung RWTH Aachen, Germany*
- **Recent Advances in Reducing Hysteresis of Rubber Composites** | *Prof. Baochun Guo, South China University of Technology, China*
- **Some Considerable Factors in Laboratory Frictional Testing Rubbers** | *Prof. Changwoon Nah, Jeonbuk National University, South Korea*
- **Enhancing Coagulation Efficiency and Overcoming Uncoagulation Issues in Skim Latex Using Synthetic and Natural Creaming Agents** | *Assoc. Prof. Charoen Nakason, Prince of Songkla University, Suratthani Campus, Thailand*
- **Bio-based Approach to Dispersion of Silica in NR** | *Prof. Dariusz M. Bieliński, Lodz University of Technology, Poland*
- **Resolving the Microstructure of Natural Rubber and Its Influence on the Mechanical Properties** | *Prof. Jinrong Wu, Sichuan University, China*
- **Engineering Allergy-Free Natural Rubber: Sustainable Deproteinization for Enhanced Industrial and Medical Performance** | *Prof. Jitladda Sakdapipanich, Mahidol University, Thailand*
- **AFM Nanomechanics Connecting Macro- and Nanoscopic World** | *Prof. Ken Nakajima, Institute of Science Tokyo, Japan*
- **Recent Trends in Adopting Sustainable Solution for Rubber Additives: How Chemistry Plays Significant Role?** | *Prof. Kinsuk Naskar, Indian Institute of Technology Kharagpur, India*
- **Natural Rubber in the Click Era: Advancing Functionalization and Modification via Click Chemistry** | *Prof. Laurent FONTAINE, Le Mans University, France*

Keynote Presentations

- **Elucidating the Role of Nanoscale Interfaces and 3D Dispersion in Elastomer Nanocomposites: Connecting Microstructure to Viscoelastic Behavior** | *Prof. Ming Tian, Beijing University of Chemical Technology (BUCT), China*
- **Optimized Synthesis of Liquid Fluorosilicone Rubber with Improved Cold Resistance for Semiconductor Application** *Prof. Sang Eun Shim, Inha University, South Korea*
- **Development of Fast Rubber Sheet-Forming Method for Natural Rubber and Its Application** | *Prof. Seiichi Kawahara, Nagaoka University of Technology, Japan*
- **Wide-Angle X-Ray Diffraction Studies on Strain-Induced Crystallization of Vulcanized Natural Rubber by Two-Step Biaxial Stretching** | *Prof. Shinichi Sakurai, Kyoto Institute of Technology, Japan*
- **New Insights into Vulcanization Reactions for Green Rubber Technology** | *Prof. Yuko Ikeda, Kyoto Institute of Technology, Japan*
- **Revisiting the Properties of Natural Rubber in Tire Industry and Development of NR-based Sidewall Compounds for EV Passenger Cars** | *Assoc. Prof. Kannika Sahakaro, Prince of Songkla University, Pattani Campus, Thailand*

Invited Presentations

- **Greener Tire Tread Compounds by Reducing the Amount of Ingredients** | *Prof. Anke Blume, University of Twente, Netherlands*
- **Delayed Crystallization Response-Inspired Waterborne Polyurethane with High Performance** | *Prof. Fei Chen, Xi'an Jiaotong University, China*
- **Soft sensing composites based on rubber and elastomer matrices: Development and characterization methods** | *Dr. Frank Jörg Clemens, Smart Ceramic Processing, EMPA, Switzerland*
- **Facile recycling strategy for end-of-life rubbers by selective cleavage of cross-linking bonds** | *Prof. Ganggang Zhang, South China University of Technology, China*
- **Greening the Elastomer Technology : Bio-Based Solid/Liquid Rubbers, Polyurethanes, and TPVs** | *Prof. Jeong Seok OH, Gyeongsang National University, South Korea*
- **Cellulose Nanocrystal: Scalable Production and Innovative Applications of Bio-based Nanofillers** | *Prof. Jianming Zhang, Qingdao University of Science and Technology, China*
- **Colour-changing Smart Materials inspired by Nature: Chameleon Effect** | *Dr. Karine Mougin, Institut de Science des Matériaux de Mulhouse, France*
- **Natural rubber foam containing gamma-synthesized chitosan for the utilization as enhanced heavy-metal sorbents** | *Assoc. Prof. Kiadtisak Saenboonruang, Kasetsart University, Thailand*

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Invited Presentations

- ***Effect of Molecular Architecture on the Thermal Stability of Poly(epichlorohydrin-co-ethylene oxide-co-allyl glycidyl ether) (GECO) Based Elastomers |*** *Prof. Murat Sen, Hacettepe University, Turkey*
- **Optimizing Silica and Carbon Black Ratios for Enhanced Mechanical Performance of NR/BR/SSBR blends** / *Assoc. Prof. Nadras Othman, Universiti Sains Malaysia (USM), Malaysia*
- ***Self-Healing Rubber: An Advancing Technology for Smart Gloves*** / *Dr. Patrick Tang Siah Ying, Monash University Malaysia, Malaysia*
- **Introduction of Reversible Bonds into Rubber Networks** / *Dr. Toshio Tada, Sumitomo Rubber Industries, Ltd., Japan*
- **Dual-Functional Natural Rubber Composites with Piezoresistive and Antibacterial Properties for Wearable Motion Detection |** *Asst. Prof. Yeampon Nakaramontri, King Mongkut's University of Technology Thonburi, Thailand*
- **Strain Softening of Rubber Nanocomposites Vulcanizates** / *Prof. Yihu Song, Zhejiang University, China*
- **Synthesis of Polyester-based Multiblock Copolymer Elastomers via A Cascade Polymerization Method** / *Prof. Yingfeng Tu, Soochow University, China*
- ***Renewable Elastomeric Networks of Functionalized Ethylene-Propylene Copolymer*** / *Prof. Yixian WU, Beijing University of Chemical Technology, China*

Natural Rubber Symposium

- **Global Efforts to Ensure Sustainability of NR Supplies |** *Stefano Savi, Global Platform for Sustainability of Natural Rubber*
- **The Role of Thailand Contributing to Sustainability of NR Supplies** / *Dr. Napawan Lekawipat, Rubber Authority of Thailand*
- **Quality of NR Novel Green Technologies for Production of User-friendly and Consistent Properties NR** / *Dr. Nantina Moonprasith, National Metal and Materials Technology Center, Thailand*
- **From Tree to Technological Materials: Turning Natural Rubber into a Game-changer for More Sustainable and Performing Products** / *Poonyawat Prateeprat, Michelin*
- **Perspective on Dipped Rubber Product Biodegradability: MRB Research Highlights and Future Pathways** / *Shabinah Filza Binti Mohd Sharib, Malaysian Rubber Board*
- ***Study of Biodegradation Efficiency of Natural Rubber Products by Various Microorganism*** / *Dr. Nattawut Boonyuen, (National Center for Genetic Engineering and Biotechnology, Thailand)*
- **Clinical Study of Allergic Properties of NR Gloves and Other NRL Products** / *Dr. Naesinee Chaiear, Khon Khan University, Thailand*
- **From Allergen to Assurance: A Comprehensive Review of Natural Rubber Product Safety and MRB's Strategic Role** / *Dr. Aziana Binti Abu Hassan, Malaysian Rubber Board*
- **Pioneering a Sustainable Biorefinery of Natural Rubber Serum for New Bioactives in Cosmetics, Food, Nutraceuticals, and Pharmaceuticals** / *Dr. Thanawat Pitakpornpreecha, Prince of Songkhla University, Thailand*
- **Modified Natural Rubber: Current Progress, Opportunities, and Challenges.** / *Dr. Krishna Veni, Malaysian Rubber Board*
- **Challenge for the Future of NR Latexand NRL Products** / *Dr. Amir Hashim Yatim, Malaysian Rubber Glove Manufacturers Association*
- **Opportunity for Industrial Applications of NR** / *Dr. Banja Junhasavasdikul, Innovation Group, Thailand*

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Exhibitor Registration

Contact Info

IRC2025 Secretariat
Polymer Society of Thailand
irc2025@thaipolymersociety.org
Contact : Dr.Taweechai Amornsakchai

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Oral Presentations

- **Thermo-chemical devulcanization of sulfur-cured styrene–butadiene rubber (SBR) using diphenyldisulfide (DPDS)** | *Jonas Petzke, Paderborn University, Germany*
- **Tribological behavior of soft polymers against model substrates** | *Prof. Sophie Bistac, Professor, Université de Haute Alsace UHA – LPIM, France*
- **Study of standard laboratory for testing medical rubber gloves according to ISO/IEC 17025** | *Dr. Hassarutai Yangthong, Researcher, Hub of Talents in Natural Rubber, NRCT, Thailand*
- **Polyrotaxane-Based Hybrid Crosslinking for Tunable Elastic and Thermal Response in Epoxidized Natural Rubber** | *Assoc. Prof. Anoma Thitithammawong, Prince of Songkla University, Thailand*
- **Why Lab Studies Matter for Understanding Tyre Wear Emissions**| *Dr. Martin Stěnička, Dr.Tomas Bata University in Zlin / University Institute / Centre of Polymer Systems, Czech Republic*
- **Impact of Fused Filament Fabrication and Processing Parameters on the Performance of $BaTiO_3$-Piezoelectric Composites for Soft Robots** | *Sofiia Butenko, EMPA, Switzerland*
- **New non-isocyanate polyurethane films based on natural rubber** | *Tharin Sensan, Prince of Songkla University, Thailand*
- **A New Antibacterial Hybrid Waterborne Polyurethane/Silica Coating Film Based on Natural rubber |** *Assoc.Prof. Dr. Nitinart Saetung, Faculty of Science, Prince of Songkla University, Thailand*
- **Method for Analyzing Mechanical Property Degradation of Polymer Materials Using Artificial Intelligence** | *Sangin Park, Researcher, Hyundai Motor Company, South Korea*
- **Molecular chain structure changes and strain-induced crystallization behaviors during various deformation of segmented polyurethane elastomer** | *Asst. Prof. Kakeru Obayashi, Kyoto University, Japan*
- **Understanding and Controlling Storage Hardening in Natural Rubber via Phospholipid Network Disruption** | *Kittipong Insom, Mahidol University, Thailand*
- **The Role of Deformation Mode on Rubber Hysteresis and Its Dependency on Viscoelasticity** | *Dr. Shouliang Nie, Researcher, Zhongce Rubber Group Co. Ltd, China*
- **Overview of SRI's research initiatives for enhancing the well-being of natural rubber stakeholders in Thailand** | *Dr. Lucksanaporn Tarachiwin, Deputy General Manager, Sumitomo Rubber (Thailand) Co., Ltd*
- **Degradation Trends in Plasticity and Viscosity of Selected Standard Philippine Rubber Under Prolonged Storage** | *Rosemarie Salazar, Assistant Regional Director, Department of Science and Technology Region IX - Philippines*

Oral Presentations

- **Study on the dispersion of silica in SBR using time-resolved ultra small angle X-ray scattering** | *Assoc. Prof. Shotaro Nishitsuji, Yamagata University, Japan*
- **Sustainable Yield Improvement and Quality Assessment of TSR10 Rubber from Two Hevea brasiliensis Genotypes: Impact of Reduced Tapping Frequency Associated with Ethephon Stimulation** | *Hathainat Kum-ourm, Researcher, Sumitomo Rubber (Thailand) Co., Ltd.*
- **Preparation and Characterization of Silica Filled Modified Natural Rubber: A Comparative Analysis of Pre-dispersion and Conventional Techniques** | *Dalip Abdulraman, Mahidol University, Thailand*
- **Mechanical Tailoring of Waterborne Epoxy Coatings on Metal Substrates using Functionalized Natural Rubber Latex** | *Dr. Wasan Tessanan, Pathumwan Institute of Technology, Thailand*
- **How microcapsule-enhanced rubber can help creating a circular economy** | *Katerina Filzer, University of Twente, Netherlands*
- **Correlative analysis of morphological and functional properties in high-performance elastomer blends** | *Dean Vidakovic, ZFE - Austrian Centre for Electron Microscopy & Nanoanalysis, Austria*
- **Advancing sustainability in synthetic rubber: from commitment to climate action** | *MARJOLEIN GROENEWEG, Marketing & Sustainability Director, Synthos Schkopau GmbH, Germany*
- **Pyrolysis of Polychloroprene Rubber with Scavenger-Based HCl Neutralization** | *Parinchaya Srithavorn, Queen Mary University of London, Thailand*
- **On the Decoupling of Chemical and Mechanical Surface Contributions in Soft Polymer Network Adhesion** | *Prof. Maurice Brogly, UHA – LPIM, France*
- **Carbon Black Coupling Agents for Improved Fuel Efficiency of Tyres** | *Max Dixey, Queen Mary University of London, United Kingdom*
- **The development of bio-inspired composites from epoxidized natural rubber using π–π stacking and cation–π interactions** | *Dr. Kwanchai Buaksuntear, Hub of Talents in Natural Rubber, National Research Council of Thailand*
- **Improving Seal Life Prediction: Faster Crack Growth Testing in HNBR and NBR** | *Orkid Ramekaj, Queen Mary University, United Kingdom*
- **Investigation of the Effect of the amount of zinc borate on cure kinetics, reversion, and mechanical properties of natural rubber in a semi-efficient curing system** |*Dr. Davut Aksüt, Hacettepe University, Turkey*
- **Study on the Effect of Silane Coupling Agents on Mechanical Behavior of Silica-Filled Styrene-Butadiene Rubber under Elongation using In Situ Nano-Palpation Atomic Force Microscopy** | *Maytawee Malineerat, Institute of Science Tokyo, Japan*

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Oral Presentations

- **Implementing Circular Economy Strategies in Power Transmission Belt Manufacturing** | *Dr. Aswathy T R, Assistant Manager, JK Fenner India Ltd., India*
- **AFM-Based Investigation of Polyisoprene-Inorganic Interface Adhesion at Multiple Scales** |*HEXUAN MAO, Institute of Science Tokyo, Japan*
- **Aluminum Soaps: A New Prospect for Rubber Application** | *Prof. Xiaorong Wang, Center for Frontier Research & Technology, Hangzhou Zhongce Rubber Company, China*
- **Sustainable NZEROSILTM Silicas from Renewable Rice Husk** | *Danniel Liao, Product Application Development Supervisor, Oriental Silicas Corporation, Taiwan, Province of China*
- **Inverse vulcanization forged self-motivated polysulfide silane: An ultra-efficient architect in engineering silica-rubber interface** | *Dr. Dong Wang, South China university of technology, China*
- **Microstructural Modelling of Carbon Black Aggregates for Sustainable Next-Generation Tyre Design** | *Sarah Pedroni, Queen Mary University of London, United Kingdom*
- **Rubber Blend Compatibility Analysis Using Large-Amplitude Oscillatory Shear (LAOS) on RPA** | *Dr. Zühra Çınar Esin, Hacettepe University, Turkey*
- **Chitosan-reinforced epoxidized natural rubber: possible design of energy-efficient tire tread compounds** | *Nantinee Choosang, Hub of Talents in Natural Rubber, National Research Council of Thailand*
- **Rubbery Soft Polymer Electrolyte Membrane with Nanomatrix Channel Prepared from Natural Rubber** | *Dr. Yoshimasa Yamamoto, Associate Professor, National Institute of Technology, Tokyo College ,Japan*
- **Biomimetic Design and Development of Natural Rubber-based Soft Robotics** | *Dr. Manus Sriring, Researcher, Rubber Technology Research Centre, Faculty of Science, Mahidol University, Thailand*
- **Experimental Analysis of the Mixing Behavior of Ethylene-Propylene-Diene Rubber (EPDM) in a Rubber Pin Extruder under Variation of Process Parameters and Mixing Elements** | *Mr. Leon Schmidt, Paderborn University, GermanY*
- **Study on Rubber Adhesive Interface Peeling Mechanism of Sealing Materials** | *Mr. Hiromu Kawasaki, Researcher, NOK corporation, Japan*
- **Influences of Sulfur Vulcanization System and Curative Content on Properties of Tire Tread Compounds Filled with Carbon Black/Silica Hybrid Filler** | *Dr. Puchong Thaptong, Researcher, National Science and Technology Development Agency (NSTDA), Thailand*
- **Eco-Efficient Vulcanization: Analysis of a Sustainable Rubber Curing Package** | *Frances van Elburg, University of Twente, Netherlands*

Oral Presentations

- **Removal of proteins from natural rubber by creaming method** | *ANH VIET TA, Nagaoka University of Technology, Japan*
- **Critical Concentration of Primary Amines for Preparation of Vulcanized Deproteinized Natural Rubber with Outstanding Mechanical Properties** | *Lam Ba Nguyen, Nagaoka University of Technology, Japan*
- **Surface-Functionalised Carbon Black as a High-Performance Filler in Elastomeric Compounds: Techniques and Potential** | *Rattapong Numard, Queen Mary University of London, United Kingdom*
- **Visualizing Nanoscale Interface in Direct Adhesive Rubbers Containing Reversible Coordination Linkages |** *Asst. Prof. Kim Hung NGUYEN, Institute of Science Tokyo, Japan*
- **Boron-Containing Elastomer** | *Assoc. Prof. Qi Wu, Sichuan University, China*
- **Enhancing the Piezoresistive Sensing Properties of TPE/CB Composites via Co-Continuous Structure Design through Natural Rubber Blending** |*Christopher Bascucci, Empa, Switzerland*
- **Friction Behaviour in Relation to Wear Morphology** | *Huong Thao Pham, Queen Mary University of London, United Kingdom*
- **Elastomeric Ionomer based on Maleated Bromobutyl Rubber** | *Assoc.Prof. Subhan Salaeh, Prince of Songkla University, Thailand*
- **Green Synthesis of Zinc Oxide from Skim Latex Serum for Application in Rubber Vulcanization** | *Asst. Prof. Preeyanuch Junkong, Mahidol University, Thailand*
- **Modelling of Elastomers under Dynamical Mechanical Loads** | *Prof. Michael Johlitz, Institute of Mechanics, Germany*
- **Extrudable Vitrimeric Rubbers Enabled via Heterogeneous Crosslinking** | *Dr. Shuangjian Yu, South China University of Technology, China*
- **Property and Application of Perfluoropolyether-modified Functional Rubber** | *Dr. Zheming Tong, PetroChina (Shanghai) New Materials Research Institute Co., Ltd., China*
- **Effect of crystal orientation on mechanical strength of poly-isoprene rubber under bi-axial deformation** | *Airi Sato, Researcher, Bridgestone Corporation, Japan*
- **Enhancing Ozone Resistance of Tyre Sidewall by Sustainable Replacement of Petroleum Wax with Bio-based Additive** | *Tirthankar Bhandary, Researcher, HASETRI, India*
- **Performance Evaluation of Silicone-Based Isolators Under Varying Temperatures and Excitation Levels Using a Thermal Chamber Shaker** | *Erdem Rahmi SENOZ, Mechanical Engineer, Aselsan, Turkey*

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Oral Presentations

- **New insights into Resins behavior: Influence of Resin Softening Point on the In-Rubber Properties of Carbon Black-Filled SBR Compounds** | *Dr. Javier Alejandro Araujo Morera, Assistant Professor, University of Twente / Elastomer Technology and Engineering, Netherlands*
- **Latex Serum Boosts Natural Rubber Strength** | *Dr. Katsuhiko Tsunoda, Researcher, Bridgestone Corporation, Japan*
- **N-Vinylamides: Structural Isomers of Amino acids Grafted onto Deproteinized Natural Rubber** | *Prof. Hiroharu Ajiro, Nara Institute of Science and Technology, Japan*
- **Low-Hysteresis Rubber Composites** | *Prof. Baochun Guo, South China University of Technology, China*
- **Study on the Performance of Natural Rubber - Copper Coated Steel Wire with BCDB and BCoPD** | *Yuan Jin, Technical Service Manager, Rebo New Material Group, China*
- **In situ methods to characterize deformation-induced mechanisms in NR** | *Dr. Eric Euchler, Leibniz Institute of Polymer Research Dresden, Germany*
- **Innovation Management for Commercial Success in the Rubber Industry Amid Shifting Global Market Forces** | *Dr. Matthew Thornton, The Rubber Initiative, United Kingdom*
- **Chemical fingerprinting for environmental detection of tyre rubber emissions** | Mr. Nick Molden, CEO, Emissions Analytics Ltd., United Kingdom
- **Formulations of finite hyperelasticity and viscoelasticity using invariants of stretch tensors** | *Prof. Alexander Lion, University of the Bundeswehr, Germany*

Poster Presentations

- **Simulation of Rubber Acoustic Coatings under Deep-Sea Pressure Based on Strain-Dependent Viscoelastic Properties** | *Dr. LIU Yue, Beijing University of Chemical Technology, China*
- **Spatiotemporal Internal-Damage Distribution During Nonuniform Deformations in Filled Elastomers** | *Yuki Tokudome, Kyoto University, Japan*
- **Accelerated Prediction of Glass Transition Temperature in SSBR via Integrated Molecular Dynamics Simulation and Machine Learning Framework** | *SIQI ZHAN, Beijing University of Chemical Technology, China*
- ***Development of an Integrated Design, Analysis ,and Evaluation System for Rubber Components*** | *Dr. Changsu Woo, Researcher, Korea*

Poster Presentations

- **Enhancing Mechanical and Antibacterial Properties of Natural Rubber/Tire Waste Blends through Dual-Phase Processing Techniques** | *Napasorn Kingkohyao, King Mongkut's University of Technology Thonburi, Thailand*
- **Development of Phosphorylated Cellulose Nanofibers/Natural Rubber Composites |** *Ryotaro TAKAYAMA, Researcher, Oji Holdings Corporation, Japan*
- **Establishment of a library database of some compounding ingredients using a Py-GC/MS technique** | *Prin Tumwised, Mahidol University, Thailand*
- **Development of Tire Tread Formulations for Military Light-Truck Tires** | *Dr. PAIROTE JITTHAM, Researcher, National Metal and Materials Technology Center, Thailand*
- **Identification and Reduction of residual allergenic rubber proteins in Natural Rubber latex gloves via Alkaline and Surfactant Treatments** | *Pimnaraporn Porncharukit, Mahidol university, Thailand*
- **Mixed-Mode Crack Propagation Criterion in Elastomers** *|Tomoki Mishima, Kyoto University, Japan*
- **Effect of Carbon Black and Barium Titanate Hybrid Filler on the Change of Electrical Signal in Epoxidized Natural Rubber Composites** | *LYHAV BOEURN, King Mongkut's University of Technology Thonburi, Thailand*
- **Feasibility Study of Tamarind Shell Powder as a Bio-Based Secondary Accelerator for Rubber Flooring** | *Weenusarin Intiya, Researcher, National Science and Technology Development Agency (NSTDA), Thailand*
- **Study on the Effect of Compatibilizer Content on the Mechanical Properties of NR/BR/NBR Blends** | *Kanokporn Sarikanonm, Kasetsart University, Thailand*
- **Fatigue Properties of Rubber Composites with Different Glass Transition Temperatures** | *Dr. Jiaye Li, Beijing University of Chemical Technology, China*
- **Strain-induced crystallization behaviors of natural rubber with additional lipids** | *Mr. Tomoaki Nakatsuka, Kyoto University, Japan*
- **Bio-Based Polyurethane/Tannic Acid Composites with Adjustable Damping Property Enabled by Constructing Multiple Sacrificial Networks** | *Dr. Dexian Yin, Beijing University of Chemical Technology, China*
- **Strain-Induced Crystallization of Carbon Black-Reinforced Vulcanized Natural Rubber by Biaxial Elongation** | *Hiroto Okumura, Kyoto Institute of Technology, Japan*
- **Influence of Balanced Ratios between Mica and Carbon Black on Rheological and Mechanical Behaviors of Elastomeric Materials** | *Assoc. Prof. Keon-Soo Jang, University of Suwon, South Korea*
- **Natural-Rubber-Based Adhesives for Housefly (Musca domestica) Control** | *KANNIKA HATTHAPANIT, Researcher, National metal and materials technology center, Thailand*

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Poster Presentations

- **Evaluation of a Non-Traditional Preservative System for Enhancing Natural Rubber Latex Stability** / *Maneephan Sukkho, Mahidol University, Thailand*
- **Study on the Impact of Purified Natural Rubber Latex and Accelerators on Rubber Allergens in Natural Rubber Gloves** / *Pitchaya Theedee, Researcher, Faculty of Science, Mahidol University, Thailand*
- **Optimized UVA-Irradiation Silane-Grafting onto Saponified Skim Rubber for Enhanced Silica-Natural Rubber Compatibility** / *Areeya Anuwatprakit, Mahidol University, Thailand*
- **Cure Characteristics of NR Compounds with Sulfur Sludge from Biogas -Wastewater Treatment in Palm Oil Industry** / *Asst. Prof. Prachid Saramolee, Walailak University, Thailand*
- **Effect of chitosan bio-based filler on the mechanical reinforcement of ENR composites** / *Ploypailin Juntosree, Kasetsart University, Thailand*
- **Development of Natural Rubber Insulating Gloves: Influence of Latex Centrifugation and Leaching on Mechanical and Electrical Properties** / *Dr. Promsak Sanguanthammarong, Researcher, National Metal and Materials Technology Center (MTEC), Thailand*
- **Predicting the glass transition temperature of polymer based on generative adversarial networks and automated machine learning** / *Zhanjie Liu, State Key Laboratory of Organic-Inorganic Composites, College of Materials Science and Engineering, Beijing University of Chemical Technology, China*
- **Influence of Bio-Based Epoxidized Natural Rubber as a Compatibilizer on Thermoplastic Polyurethane/Natural Rubber Blends for 3D Printing Applications** / *Torfan Srisuwanno, King Mongkut's University of Technology Thonburi, Thailand*
- **Changes in nanostructural changes during tearing of elastomeric poly(butylene succinate)/poly(butylene succinate adipate) blend films** / *Kazuki Imai, Kyoto Institute of Technology, Japan*
- **A Melt Crystallization and Dewetting Kinetics of Marine-Degradable Polyesters in Thin Films** / *Ryu Miyajima, Kyoto Institute of Technology, Japan*
- **Influence of vacancy defect on stretching behavior of liquid crystal elastomer membrane** / *Takumi Kato, Kyoto University, Japan*
- **Texture Evolution and Mechanical Response of Cholesteric Liquid Crystal Elastomers with a Lying Helix Structure** / *Koudai Tanino, Department of Material Chemistry, Graduate School of Engineering, Kyoto University, Japan*
- ***Characterization of polyisoprene blended with urethane compounds*** / *Dr. Takashi Kakubo, Senior Engineer, The Yokohama Rubber Co., Ltd. , Japan*

Poster Presentations

- **Facile and efficient preparation of functionalized diene-elastomers via dynamic covalent polymerization |** *Xinglong An, Institute of Emergent Elastomers, School of Materials Science and Engineering, South China University of Technology, China*
- **Application of Ozone Treatment to Reduce Foul Odor in Cup Lump Rubber Production** / *Chaveewan Kongkaew, Researcher, National Metal and Materials Technology Center, Thailand*
- **Preparation of DES-containing Polyurethane Elastomer and Its Moisture-dependent Electrical Conductivity** / *Shogo Taketa, Nagasaki University, Japan*
- **Changes in Nano Structure upon Uniaxial Stretching of Polyurethane Liquid-Crystalline Elastomers as Analyzed by Small-Angle X-ray Scattering** / *Yume SUGINO, Kyoto Institute of Technology, Japan*
- **Effective degradation of waste tyre rubber using a specific treatment process: A Chemi-biological Method** / *Pritish Raj Shukla, Birla Institute of Technology and Science- Pilani, K.K. Birla Goa Campus, India*
- **Mediating Carbon Black-Natural Rubber Interface by Thioamide-Functionalized Polysulfide for Energy-Saving Composites** / *Ruoyan Huang, Institute of Emergent Elastomers, School of Materials Science and Engineering, South China University of Technology, China*
- **Design and molecular dynamics simulation of Biomass Ion-conductive elastomer** / *Dr. Jiajun Qu, Beijing University of Chemical Technology, China*
- **AFM Nanomechanics of Vulcanized Rubber Containing Silica and Petroleum Resin** / *Makiko Ito, Researcher, Institute of Science Tokyo, Japan*
- **Highly conductive Ag/pCF/MVQ composite rubber for efficient electromagnetic interference shielding** /*Yang Chen, Beijing University of Chemical Technology, China*
- **A Facile Method in Fabricating Flexible Composite elastomer with Large-Size Segregated Structures for Electromagnetic Interference Shielding** / *Liang He, Beijing University of Chemical Technology, China*
- **Deproteinization Process of Natural Rubber Latex by Membrane Filtration** /*Prof. Yoko Aoyama, KOSEN-King Mongkut's Institute of Technology Ladkrabang, Thailand*
- ***Thermal Analysis of the Mullins Effect in Filler Reinforced Elastomers*** / *Koshi Shimazaki, Department of Material Chemistry, Kyoto University, Japan*
- **Study on Melting Behavior of Crystallites in Carbon Black-Filled Vulcanized Natural Rubber Upon High-Speed Shrinkage from Its Highly Elongated State** / *Maho Nakada, Kyoto Institute of Technology, Japan*
- **Wide-angle X-ray diffraction studies on thermal melting behavior of crystallites formed by planar elongation of vulcanized natural rubber** / *Shoei Okamoto, Kyoto Institute of Technology, Japan*

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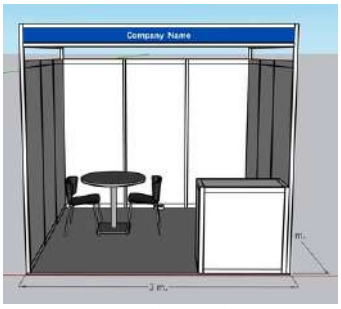

9 SQM ShellScheme
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4 SQM ShellScheme
Booth: 1500 US$

Exhibitor Profile

Global Manufacturers & Suppliers of

- Natural & Synthetic Rubbers
- Rubber Chemicals
- Recycled Rubbers and Rubber Chemicals
- Rubber Analysis & Testing Equipment
- Rubber & Latex Products
- Rubber Technical Services
- Books and Periodicals

Participating Exhibitors

- MTEC (Polymer Research Organization)
- Struktol (Rubber Chemical)
- Sumitomo Rubber (Products)
- LAWER S.p.A (Chemical feeding automation)
- CG Engineering (Testing Instruments)
- Nippon Soda Co., Ltd. (Chemicals)
- Test Industry SRL (Testing Instruments)
- Emissions Analytics (Testing Instruments)
- Rubber Technology Research Centre (Testing)
- Rubber World / Rubber Review (Publication)
- TechnoBiz
- Rubber Industry Club, FTI
- Prince of Songkla University
- Hub of Talents in Natural Rubber, National Research Council of Thailand (NRCT)

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Edition - 4 | Hybrid Event

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TechnoBiz RUBBER WEEK

28-31 OCT 2025
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Hybrid Event | Edition 4

A TechnoBiz Executive Forum on Rubber Industry & Technology

Training	**Conference**	**CEO FORUM**
Hall of Fame	**Rubber Clinic**	**Rubber Quiz**

About TechnoBiz Rubber Week 2025 – Sri Lanka

The 4th Edition of TechnoBiz Rubber Week 2025 will be held from 28–31 October 2025 at Marino Beach Hotel, Colombo, as a hybrid executive forum dedicated to the rubber industry and technology. This premier event provides a unique platform for professionals across plantations, manufacturing, academia, and business leadership to engage in knowledge exchange, skill development, and strategic dialogue with a strong focus on sustainability, innovation, and global market competitiveness.

The program begins with a specialized training course on Rubber Industry & Plantation Sustainability, covering ESG, carbon credits, life cycle thinking, EUDR compliance, and opportunities for smallholders and producers. Additional training sessions include Advanced Polymer Science: Structure, Analysis & Applications and Global Market Expansion: Marketing & Branding for the Rubber Sector, enabling participants to build both technical expertise and business capabilities.

At the core of the event is the Sri Lanka Rubber Conference (29–30 October), featuring five keynote lectures and over 25 technical presentations from leading experts on materials, processes, energy, sustainability, circular economy, and industry innovation. This is complemented by the CEO Forum (29 October, by invitation only), where top industry leaders gather to discuss strategic challenges, leadership, and the future vision for the Sri Lankan rubber sector.

Special highlights include the prestigious Rubber World – Hall of Fame Awards, the TechnoBiz Clinic (Rubber Doctor) for live technical troubleshooting, and the engaging Rubber Knowledge Quiz.

With its combination of training, technical sessions, recognition programs, and high-level networking opportunities, TechnoBiz Rubber Week 2025 offers a comprehensive and forward-looking forum to strengthen Sri Lanka's position in the global rubber industry while empowering professionals with the knowledge and connections to drive sustainable growth

Contact Person: Mrs. Yugantha Piyadasa | T: +94-77 317 5890 |E: yugantha.piyadasa@gmail.com

TechnoBiz
RUBBER WEEK

28-31 OCT 2025
COLOMBO, SRI LANKA

Hybrid Event | Edition 4

A TechnoBiz Executive Forum on Rubber Industry & Technology

Training | **Conference** | **CEO FORUM**

Hall of Fame | **TechnoBiz Clinic** | **Knowledge Test**

EVENT SCHEDULE

TRAINING

28 Oct 2025 | Tuesday | 9am-6pm
Rubber Industry & Plantation Sustainability: ESG, Carbon Credits & Life Cycle

31 Oct 2025 | Friday | 9am-12pm
Advanced Polymer Science: Structure, Analysis & Applications

31 Oct 2025 | Friday | 2pm-5pm
Marketing & Branding for Global Market Expansion

CONFERENCE

29-31 Oct 2025 | Wednesday - Friday
Sri Lanka Rubber Conference
- 5 Keynote Presentations | 25+ Oral Presentations

CEO FORUM

29 Oct 2025 | Wednesday | 7pm-11pm
- Rubber Industry CEO Forum *(by invitation only)*

AWARDS

29 Oct 2025 | Wednesday | 12pm-1pm
- Rubber World - Hall of Fame

CLINIC

29-30 Oct 2025 | 5pm-6pm
- TechnoBiz Clinic - Rubber Doctor

QUIZ

29-31 Oct 2025
TechnoBiz Knowledge Test - Rubber Technology

Chairman

Dr. Susantha Siriwardena

Project Manager

Yugantha Piyadasa

Founder

Peram Prasada Rao

Venue :
Marino Beach Hotel

TechnoBiz
RUBBER WEEK

28-31 OCT 2025 | COLOMBO, SRI LANKA


Lakshman Abeysekera


Mohideen Cader


Manoj Udugampola


Dr. Upul Ratnayake


Prof. Shantha M Egodage


KS Venkatesh


Prof. Hemanthi Ranasingha


Ranil Abeysekara


Saman Gunathilaka


Sakunthala Goonetilleke


Dr. W.D.M. Sampath


Dr. Dinesh Attygalle


Subadra Jayasinghe


Gayan Ranasinghe


Don Merl


Umesh Hettiarachchi


Dr. Baggya Karunarathna


Dr. Asangi Gannoruwa


Dr. Sudarshana Perera


Vindya Wijesinghe


Dr. Sunil Mendis


Dr. Mahinsasa Rathnayake


Dr. Bhadranie Thoradeniya


Dr. Dhammika Weerathunga


Dr. Chandima Narangoda


Dr. M. A. Madhubhashini


Dr.H.P.P.S.Somasiri


Prof. L.Karunanayake


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KS Kithsiri


Dr. Sampath Wahala


Dr. Pasan Dunuwila


Eranga Dilhan


Dr. Suranga Rajapaksa


Dr. Sisira Ranatunga


Dimantha Jayawardena


Shyanaka Walgama


Arshad Iqbal


Dr. Lakshman Rodrigo


Mridul Mathur

TechnoBiz

RUBBER WEEK

Hybrid Event | Edition 4

28-31 OCT 2025

COLOMBO, SRI LANKA

Marino Beach Hotel

Training Course | 28 October 2025 | 9am-5pm

Rubber Industry & Plantation Sustainability : ESG, Carbon Credits & Life Cycle Thinking

Course Content

- ESG Beyond Compliance: Creating Value under EU Rules
- Carbon Accounting & EUDR: Opportunities for Rubber Producers
- Life Cycle Thinking: Boosting Competitiveness in Rubber
- ESG & Smallholders: Social and Environmental Value in Supply Chains
- EUDR in Practice: Traceability Success of a Rubber Exporter
- Carbon Credits: Monetizing Sustainability in Rubber Plantations

Speakers

- Dr. Sampath Wahala, Senior Lecturer, University of Sabaragamuwa
- Dr. Pasan Dunuwila, Senior Lecturer, University of Sri Jayewardenepura
- Eranga Dilhan, General Manager Sustainable Business, MAS Holdings

Training Course | 31 October 2025 | 9am-1pm

Advanced Polymer Science: Structure, Analysis & Applications

Course Content

- Introduction to Advanced Materials
- Structure–Property Relationships: How structure dictates performance
- Analytical & Characterization Methods
- Smart and Functional Materials
- The impact of performance of products in applications

Speaker : *Dr. Suranga M. Rajapaksha*, Senior Lecturer, University of Sri Jayewardenepura | Head of R&D, Riley's PVT Ltd & Toyo Cushion.

Training Course | 31 October 2025 | 2pm-5pm

Global Market Expansion: Practical Marketing & Branding

Course Content

- Global Markets & Entry – understanding opportunities and strategies for expansion
- Cross-Border Branding – balancing global identity with local market adaptation
- Digital & Partnerships – leveraging online channels, distributors, and influencers
- Smart Storytelling – creating culturally sensitive and impactful brand messages
- Compliance & Risk – managing regulations, pricing, and brand protection
- Action Plans – learning from examples and building practical action plans

Speaker : Peram Prasada Rao, CEO/Founder, TechnoBiz

Contact Person: Mrs. Yugantha Piyadasa | T: +94-77 317 5890 |E: yugantha.piyadasa@gmail.com

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RUBBER WEEK

Hybrid Event | Edition 4

28-31 OCT 2025

COLOMBO, SRI LANKA

Marino Beach Hotel

Sri Lanka Rubber Conference

29-30 October 2025 | Wed-Thu

29 October 2025 (Wednesday)

08:30-09:15	Delegate Registration
09:15-09:30	Program Introduction | *Peram Prasada Rao*
09:30-09:40	Welcome Remarks | *Dr. Susantha Siriwardena*
09:40-10:10	**Keynote Speech | Challenges in the Global Market and Necessity of Market Diversification** *Mohideen Cader, Group Managing Director, Sinwa Holdings Ltd., Sri Lanka*
10:10-10:30	**ESG in Action: Turning Sustainability into a Profit Engine** *Sakunthala Goonetilleke, Managing Director, Institute of Total Quality Solutions, Sri Lanka*
10:30-10:50	**TechnoBiz Services for Global Rubber Industries |** *Peram Prasada Rao, CEO/Founder, TechnoBiz*
10:50-11:10	**Coffee / Tea Networking Break**
11:10-11:30	**Data-Driven Rubber Processing: Turning Factory Data into Profit** Eng. Saman Gunathilaka, Head of Business Compliance, HITEC Sensor Developments Pvt Ltd
11:30-12:30	**Award Session | Rubber World - Hall of Fame**
12:30-13:30	Lunch Break

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Marino Beach Hotel

Sri Lanka Rubber Conference

29-30 October 2025 | Wed-Thu

13:30-14:00	**Keynote Speech | Shaping the Future of Sri Lanka's Glove Industry: Innovation, Market Demands and Industry Challenges |** *Dr. Upul Ratnayake, Director - Technical and R&D, Dipped Products PLC (Hayleys Group)*
14:00-14:20	**Global Solid Tire Industry: New Trends, Emerging Markets & Evolving Dynamics** *Ranil Abeysekara, Director – International Marketing & Sales , Rovince Industrial Tires (Pvt) Ltd., Sri Lanka*
14:20-14:40	***People, Process, and Product: Leveraging Systems Thinking in AI for Rubber Manufacturing*** *Don Merl, Director of Operations & IT, Clinco Rubber Mouldings (Pvt) Ltd., Sri Lanka*
14:40-15:00	**Life Cycle Assessment for Sustainable Rubber Products Manufacturing** *Umesh Hettiarachchi, Team Leader - Sustainability Assessment & Verification, Control Union Inspections (Pvt) Ltd.,*
15:00-15:30	**Coffee / Tea Networking Break**
15:30-15:50	**Chemical Modification of Natural Rubber Latex for New Materials** *Dr. Asangi Gannoruwa, Head-Department of Materials & Mechanical Technology* *Faculty of Technology, University of Sri Jayewardenepura, Sri Lanka*
15:50-16:10	**Green chemicals impacts in Rubber Chemistry and Technology** *Subir Sen, Managing Director, PMC Rubber Chemicals, India*
16:10-16:30	**Natural Rubber Films in Electromagnetic Radiation Shielding Applications.** *Dr. Dhammika Weerathunga, Senior Lecturer University of Sri Jayewardenepura*
16:30-16: 50	**Converting Effluent Treatment Plant Sludge from Glove Manufacturing into Organic Fertilizer** *Dr. Sunil Mendis, R & D Director, ATG Group of Companies*
16:50-17:10	**Nitrosamine-Safe Accelerators for Sustainable Rubber Product Manufacturing** *Dr. Hasara Samarasingha, Research Officer, Rubber Research Institute Sri Lanka*
17:10-18:00	**TechnoBiz Clinic : Rubber Doctor**

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Sri Lanka Rubber Conference

29-30 October 2025 | Wed-Thu

30 October 2025 (Thursday)

09:00-09:30	**Keynote Speech | Innovative Materials & Processes: Shaping the Future of the Rubber Industry |** *Prof. Shantha M Egodage, University of Moratuwa, Sri Lanka*
09:30-09:50	**Dry Natural Rubber Cellular Composites : Properties & Applications |** *Dr. W.D.M. Sampath , Senior Research Officer, Rubber Research Institute of Sri Lanka (RRISL)*
09:50-10:10	**Cost-Effective and Reliable Method for Latex Testing** *Mridul Mathur – Regional Sales Manager, Foss India Pvt. Ltd.*
10:10-10:30	**Sustainable Use of Energy in Rubber Industry in Sri Lanka** *K.S Kithsiri, Director (Industrial and Services Sectors), Sri Lanka Sustainable Energy Authority*
10:30-10:50	**Coffee / Tea Networking Break**
10:50-11:20	**Keynote Speech | Renewable Energy in Sri Lanka: Current Landscape & Future Trends Impacting Industry |** *Dr. Dinesh Attygalle | Senior Lecturer, University of Moratuwa, Sri Lanka*
11:20-11:40	**Measuring What Matters: Carbon Pool Assessment and Monitoring Protocols in Plantation Carbon Credit Projects |** *Prof. Hemanthi Ranasingha, University of Sri Jayawardenapura*
11:40-12:00	**Rubber Plantations as Climate Guardians: A Sustainable Perspective** *Dr. Mahinsasa Rathnayake, Senior Lecturer, University of Moratuwa*
12:00-12:20	**Effective Testing and Institutional Connectivity: A Framework for Reverse Engineering Rubber and Plastics in Sri Lanka |** *Dr Sudarshana Perera, Lecturer, Institute of Technology, University of Moratuwa*
12:20-12:40	**Practical Applications of the Rubber Process Analyser (RPA) in Production Floor Operations** *Shyanaka Shyamal Walgama, Polymer Technologist at Elastomeric Engineering Co. Ltd*
12:40-13:40	**Lunch Break**

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Sri Lanka Rubber Conference

29-30 October 2025 | Wed-Thu

13:40-14:10	**Keynote Speech | EUDR Readiness of Sri Lankan Rubber Plantations** *Manoj Udugampola | Director, DR Industries Pvt Ltd, Damro Group, Sri Lanka, Agalawatte Plantations PLC, Sri Lanka*
14:10-14:30	**Computational Chemistry Approaches: Designing Sustainable, High Performance Rubber Products for a Circular Economy |** *Dr. Baggya Karunarathna, Senior Lecturer, Faculty of Science, Eastern University Sri Lanka*
14:30-14:50	***Unlocking Value through Intellectual Property: Driving Innovation and Competitiveness in Sri Lanka's Rubber Sector |*** *Vindya Wijesinghe, Senior Innovation Officer, National Innovation Agency, Sri Lanka*
14:50-15:10	**Diatomaceous Earth Incorporated Natural Rubber Latex Foams as Efficient Oil Sorbents** *Dr. M. A. Madhubhashini Maddumaarachchi Senior Lecturer, University of Sri Jayewardenepura*
15:10-15:30	**Coffee / Tea Networking Break**
15:30-15:50	**Total Quality Management (TQM) in the Rubber Industry |** *Dr.HPPS Somasiri , Add. Director General – Technical Services Industrial Technology Institute, Sri Lanka*
15:50-16:10	***Assuring Product Quality through Laboratory Accreditation and Analytical Test Results*** *Subadra Jayasinghe, Laboratory Quality Consultant for UNIDO*
16:10-16:30	**Driving Circular Economy Performance in the Rubber Sector through ISO 59020:2024** *Gayan Ranasinghe, Scheme Manager- Sustainability Assessment & Verification, Control Union Inspections (Pvt) Ltd.*
16:30-16:50	**Exploring the Role of Biochar in Strengthening Rubber Materials** Prof. Lalin Karunanayake, Department of Polymer Science, University of Sri Jayewardenepura
16:50-17:10	**A Novel Devulcanizable Rubber System Based on Organic Chemistry Principles** *Dr. Chandima J. Narangoda, Senior Lecturer University of Sri Jayewardenepura*
17:10-17:30	**Building a Resilient and Sustainable Natural Rubber Ecosystem** Arshad Iqbal General Manager, M/S Kamar & Sons Holding (Pvt) Ltd
17:30-17:50	**Eco-Incentives in Action: How Sri Lanka's Rubber Industry Supports Growers Through |** *Dr. Lakshman Rodrigo, Senior Scientist International Center for Research in Agroforestry (ICRAF)*
17:50-18:30	**TechnoBiz Clinic :** Rubber Doctor

TechnoBiz
RUBBER WEEK

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COLOMBO, SRI LANKA

Marino Beach Hotel

CEO Forum | 29 Oct 2025 | 7pm-10pm

Sri Lanka Rubber Industry CEO Forum

19:00-19:20	***Welcome Remarks*** *Dr. Sisira Ranatunga, Director General* *Sri Lankan Association of Manufacturers and Exporters of Rubber Products (SLAMERP)* *Dimantha Jayawardena, Chairman* *Sri Lanka Automotive Component Manufacturers Association (SLACMA)*
19:20-19:40	**Keynote Speech | National SME Policy Framework and Entrepreneurship Development in Sri Lanka |** *Lakshman Abeysekera, Chairman and Director General National Enterprise Development Authority (NEDA), Sri Lanka*
19:40-20:00	**Keynote Speech | Visionary Leadership and Entrepreneurship Development** *KS Venkatesh, Managing Director, SRP Synthetic Rubber Products Pvt., Ltd., India*
20:00-20:30	**TechnoBiz RoundTable** | Rubber Sri Lanka 2030 - Leadership, Vision, Innovation & Growth
20:30-20:35	**Vote of Thanks** | *Yugantha Piyadayasa*
20:30-22:00	Networking Dinner

Delegate Registration Fee / Person

Sri Lanka Rubber Conference (29-30 Oct 2025)	30,000 LKR	300 US$
Training - Rubber Industry & Plantation Sustainability (28 Oct 2025)	20,000 LKR	200 US$
Training - Advanced Polymer Science (31 Oct 2025)	15,000 LKR	150 US$
Training - Global Market Expansion: Marketing & Branding (31 Oct 2025)	20,000 LKR	170 US$
Sri Lanka Rubber Industry CEO Forum (29 Oct 2025)	15,000 LKR	200 US$

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Silver Sponsor: 200,000 LKR | 675 US$
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- Recognition in all publicity material

CONTACT PERSON

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Peram Prasada Rao , Project Director / Founder
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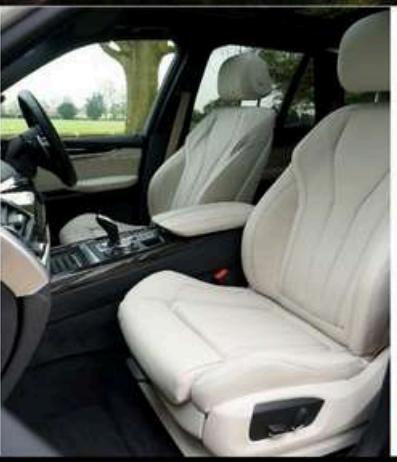

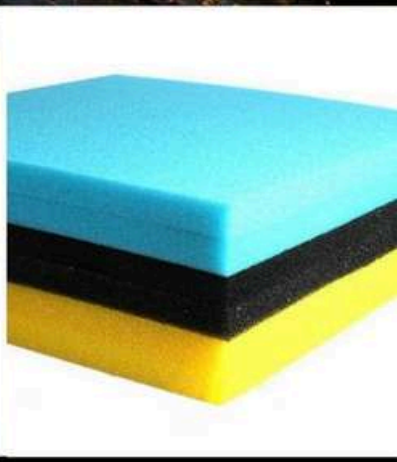

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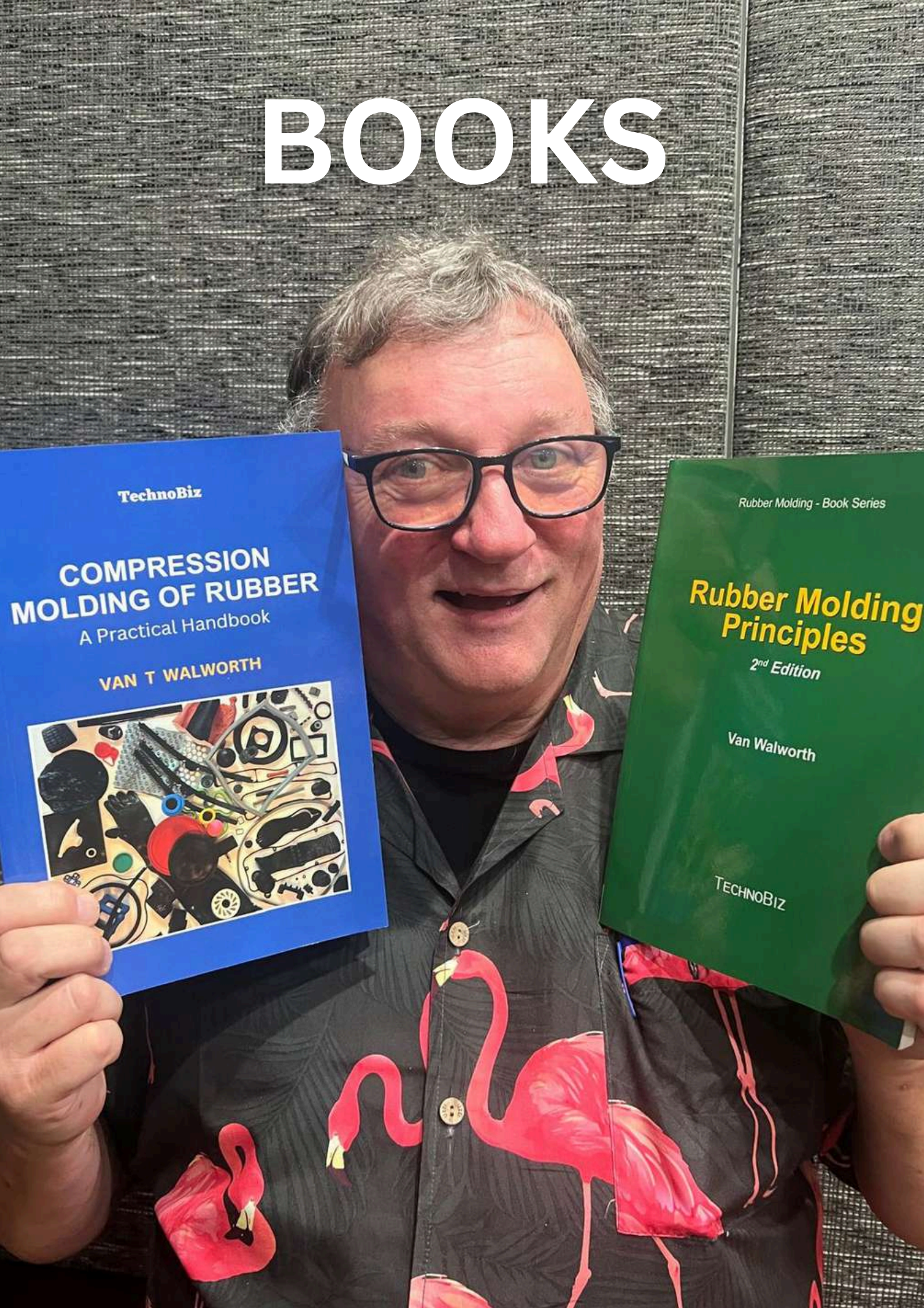
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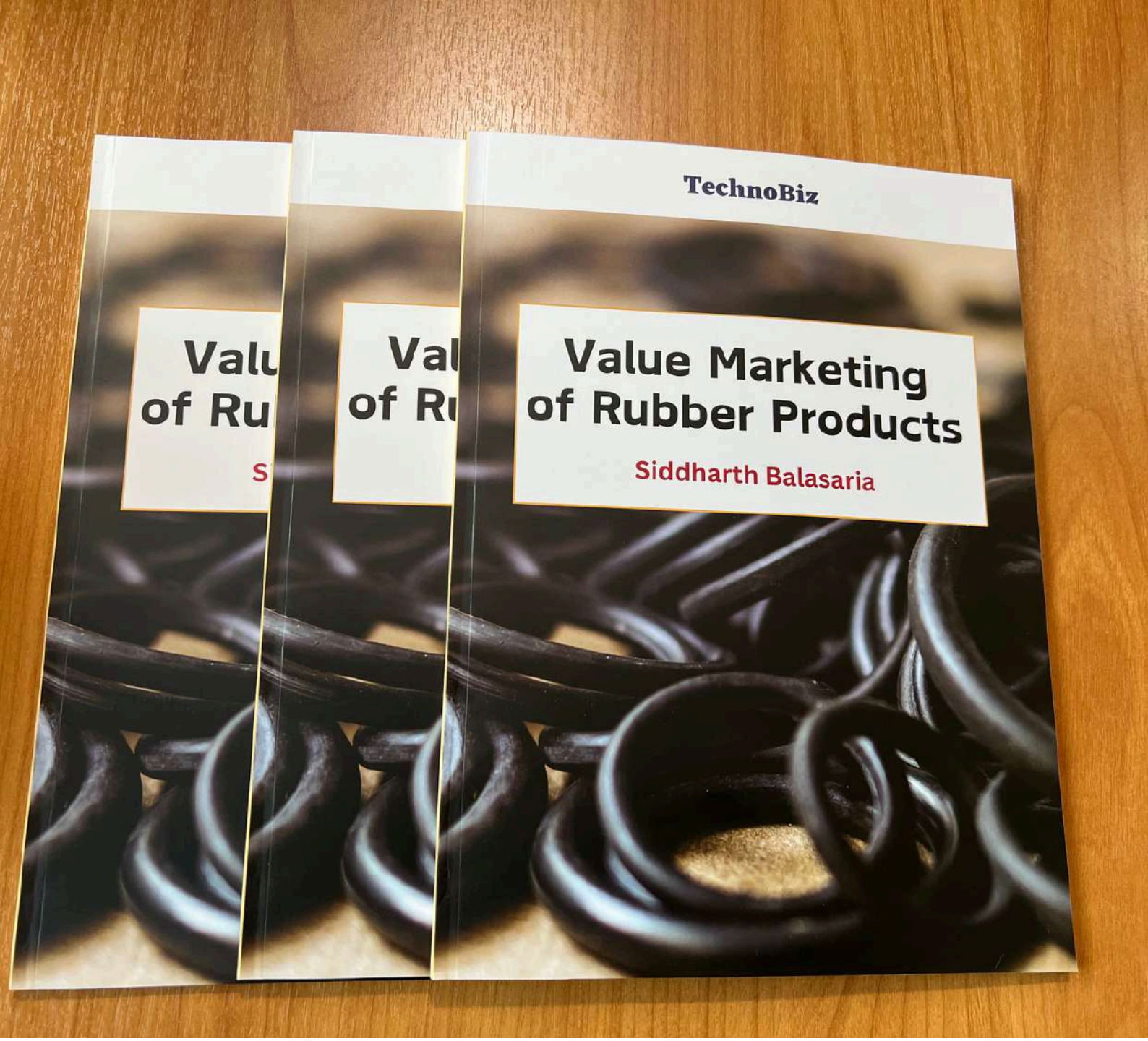

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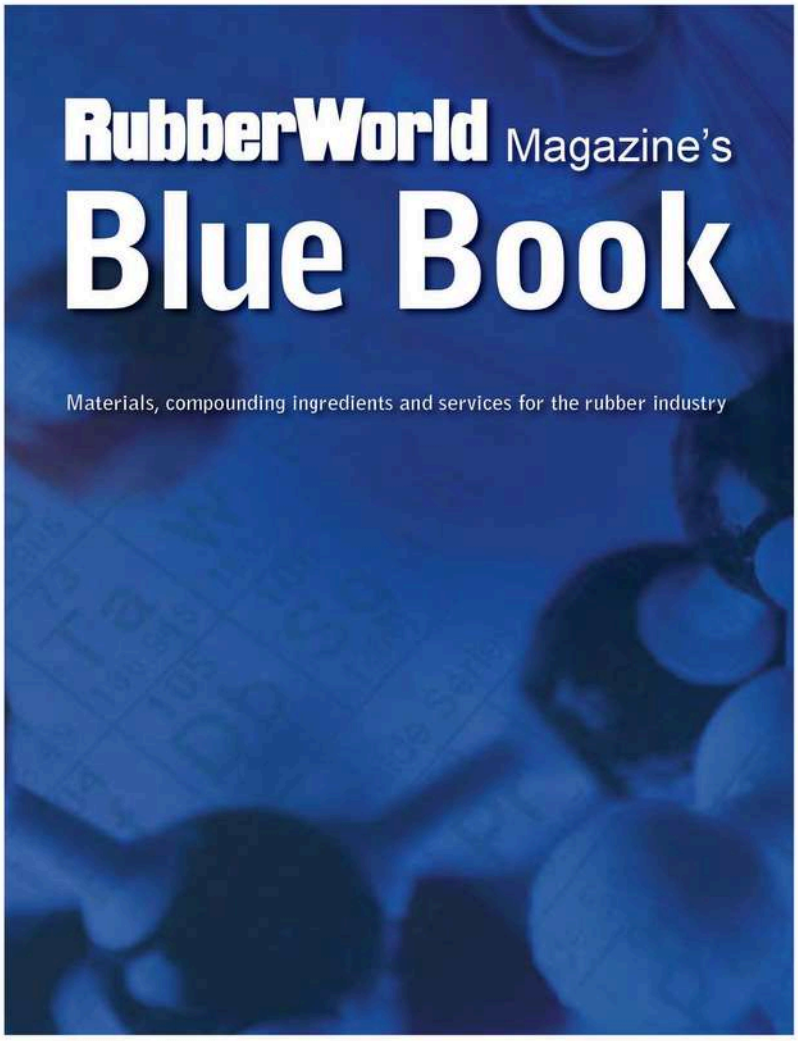
RubberWorld

PRINT EDITION AND ONLINE
Long regarded as the industry's single most important reference for technical information, the Blue Book contains detailed information on every raw material used by the rubber industry-including chemical additives, extenders, elastomers and latexes, fillers and reinforcing materials, carbon black and coloring materials, to name a few.



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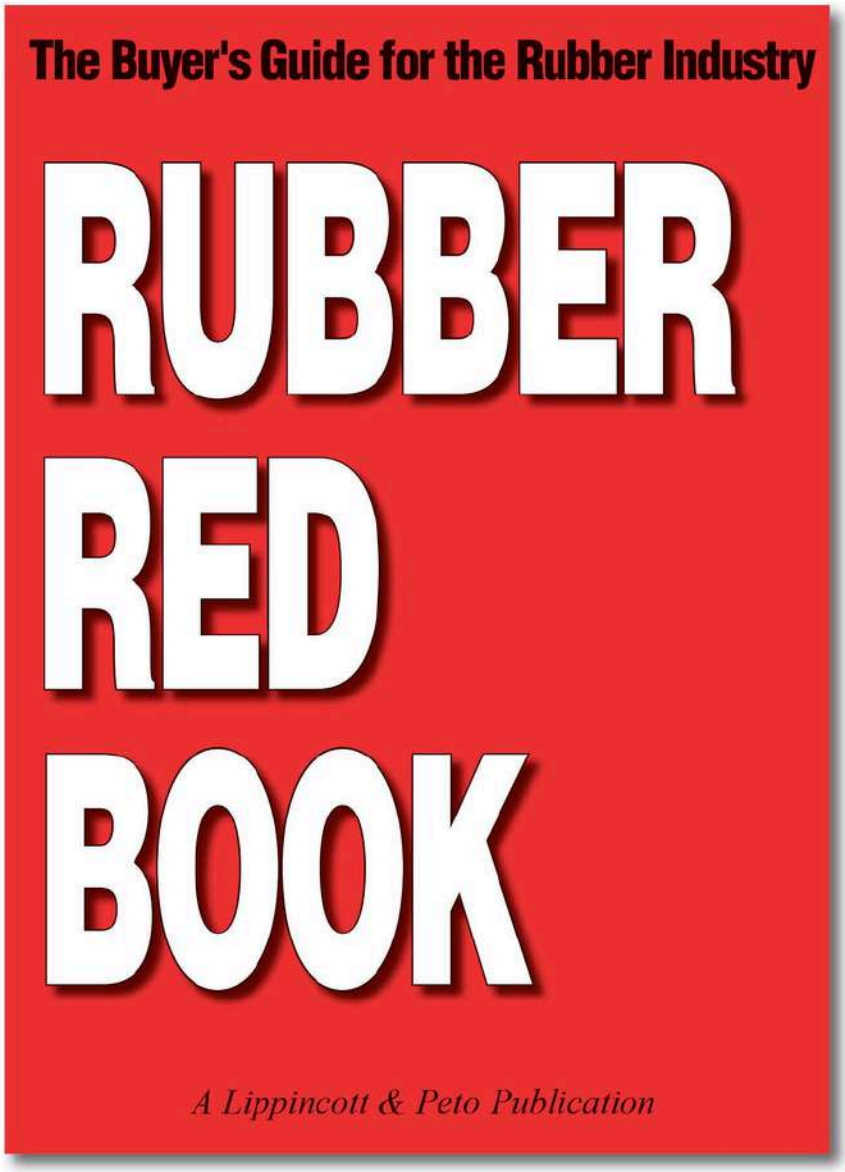

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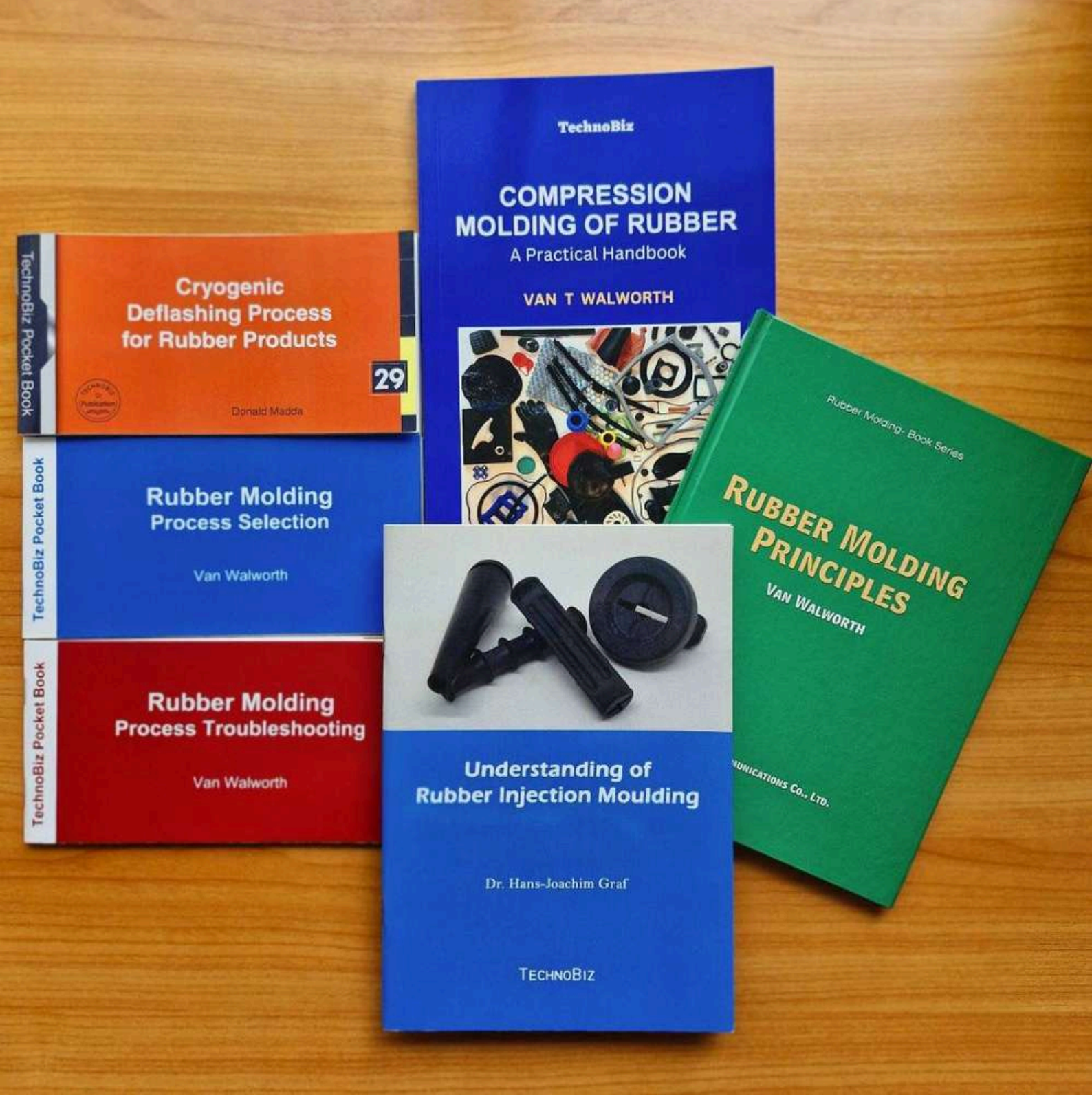

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CLARIANT

Clariant

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DAP : Diammoniumphosphate

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