

Organised by





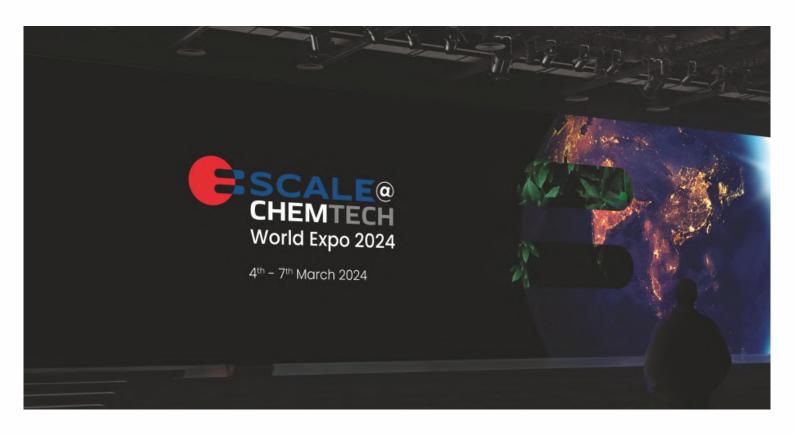
and Exhibition Highlights

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Solving for Climate Action by Leveraging the Ecosystem



Introduction

SCALE - Solving for Climate Action by Leveraging the Ecosystem held from 4th to 7th March 2024 at the Bombay Exhibition Centre in Mumbai, India, was a significant gathering of industry leaders, innovators, and investor networks. SCALE 2024 was organized by ChemTECH and Spectrum Impact (the family office of Mr. Rajendra Gogri and Aarti Gogri, one of the promoters of Aarti Industries). This report encapsulates the essence of the event, its key outcomes, and the way forward.

Spectrum Impact and ChemTECH Collaboration

The collaboration between Spectrum Impact and ChemTECH at the SCALE 2024 conference played a pivotal role in amplifying the impact of the event. Spectrum Impact's expertise in sustainable development and climate solutions complemented ChemTECH's long-standing reputation as a leading platform for showcasing advancements in the chemical & process industry. SCALE at ChemTECH serves as the climate lens to the chemical and manufacturing sector in India, offering a platform to explore synergies between global climate tech companies and the Indian corporate and manufacturing ecosystem. This collaboration fostered a diverse range of discussions, bringing together stakeholders from various sectors to explore synergies between technology and industry practices. Through this joint initiative, Spectrum Impact and ChemTECH contributed to the rich tapestry of ideas and solutions presented at the conference. Moving forward, this partnership holds immense potential for driving collective action towards a more sustainable and resilient future. Incorporating SCALE into the broader industrial expo provided start-ups, investors, and pertinent stakeholders with enriched perspectives, thus expediting their timelines in finding their business requirements. By integrating SCALE within the broader industrial expo, start-ups, investors, and relevant stakeholders gained deeper insights, benefiting from accelerated timeframes and enhanced networking opportunities, thus maximizing the advantages of the expo platform.

The advantages of SCALE as part of the ChemTECH Word Expo:



Participants gained different perspectives and identified supply chain opportunities in reduced timeframes, cost-efficient alternative solutions, and navigating the landscape for their scale-up journey.



Start-ups received deeper insights into the Indian industrial ecosystem and access to manufacturing capabilities for their scale-up.



High quality and focused exhibitor platform helped the participants to figure out the potential solutions and connections in reduced timeframes.

The SCALE advisory board, comprising experts in various relevant fields, played a pivotal role in guiding strategic decisions and providing invaluable insights throughout the planning and execution of the event. Their collective expertise and guidance significantly contributed to the success of the event by ensuring alignment with industry trends, fostering fruitful collaborations, and maximizing the impact of our initiatives.



Our Vision

SCALE's vision is to help accelerate climate technologies to achieve their true potential by leveraging the ecosystem capabilities.

This involved:

- Engaging with Indian and Global climate tech ecosystems
- Collaborating with cost-competitive manufacturers to access efficient supply chains for scaling sustainable climate solutions
- Building corporate partnerships and tapping into a competent talent pool
- Establishing connections with academic institutions and engaging with policy makers and think tanks to foster collaboration and innovation.

SCALE in Numbers



500

Attendees

(including exhibitors, delegates, speakers, visitors)



200

SCALE Networking
Dinner participants!



60

Total number of presentations



14

Total number of sessions

Date: 4th - 7th March 2024

Venue: HALL 3, Bombay Exhibition Centre, Mumbai

Day 1

presentations across

3 themes

Day 2

presentations across

6 themes

Day 3

presentations across

5 themes

The list of exhibitors, speakers, and delegates is attached to this report In Annexure II.



Highlights



Mr. Suresh Prabhu

Former Minister of Civil Aviation, Railways, Commerce & Industry, Government of India

He is a seasoned Indian politician known for his leadership roles in various ministries, including Commerce and Industry, Railways, and Civil Aviation. With a background in economics and a reputation for strategic policymaking, he has played a pivotal role in shaping India's trade and transportation infrastructure, driving economic growth and connectivity both domestically and internationally. At the carbon capture and storage session during SCALE, Mr. Suresh Prabhu delivered an enlightening speech that illuminated the pivotal role of innovative technologies in addressing the pressing challenges of carbon emissions and climate change. His speech sparked a dialogue on the need for policy frameworks that incentivize CCS deployment while ensuring environmental integrity and social equity, paving the way for concerted efforts to accelerate the transition towards a sustainable, low-carbon future.





Key Themes

The conference focused on climate technologies to tackle global challenges in climate change and sustainability. Annexure I of this report outlines its program, highlighting key themes such as:





Distinguished Session Chairs



NTPC

Baseload Clean Energy, Coal Plant Re-use & Industrial Heat



NTPC | Long Duration Energy | Storage



Adani Solar Solar



Aarti Industries

Chemical Separation



SABIC | Renewable Chemicals



ONGC | Carbon Capture



ONGC | Carbon Capture



BPCL | Hydrogen



Aarti Resource Efficiency
Industries - Energy



Aarti Industries

Resource Efficiency - Water



Deepak
Fertilizers &
Chemicals Ltd.

Ammonia / Fertilizers



Nurture Agritech Farm



Ion Exchange

Biomass Value Creation



JK Cement | Cement



Reliance Che Industries Ltd. Rec

Chemical Recycling



Baseload Clean Energy, Coal Plant Re-use & Industrial Heat



Commercialising Drilling Technology to Access Super-Hot Geothermal



Increasing Power Plant efficiency with Supercritical Carbon Dioxide (sCO2) power cycles



Aneutronic Nuclear Fusion using Hydrogen & Boron



Digital Platform for Bioenergy Supply Chain



Converting Agri & Food Waste to CBG & Bio-CNG

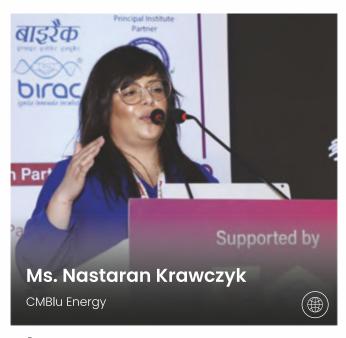


Zero Emissions Industrial Heat

Long Duration Energy Storage



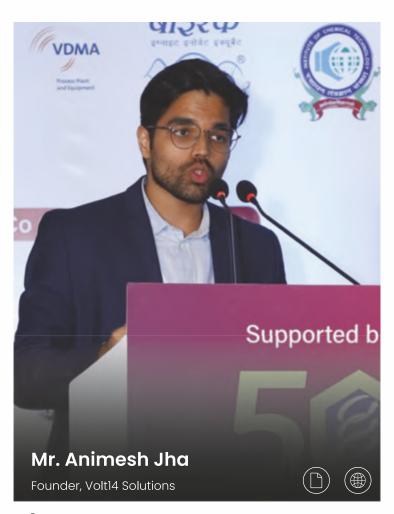
High Density Pumped Hydro Storage



Sustainable, Safe and Scalable Energy Storage by Organic SolidFlow Battery



I Energy Management Software & Integration of Energy Storage Systems for Power sector applications.



High density Li-ion batteries with proprietary Silicon Anode Technology





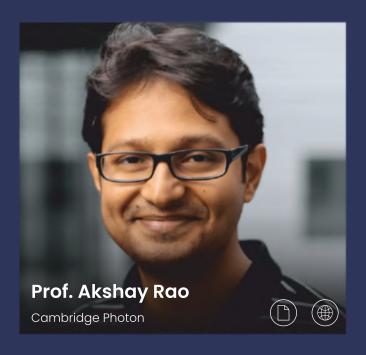
Developing innovative Solid State Coatings to address solar panel efficiency, high maintenance cost



Electroplating process for replacing silver with copper for solar cells contacts.



Using photochromic Molecules to Store Solar Energy.

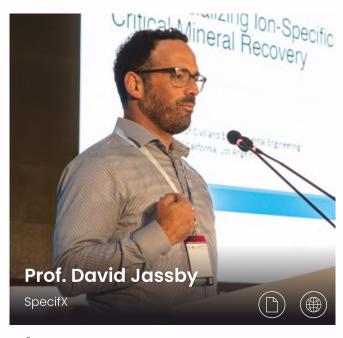


Developing Photon Multiplier Materials increase the performance of existing Silicon Solar Panels by as much as 15%

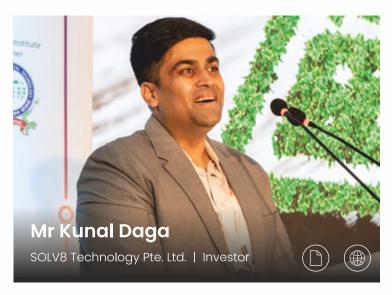
Chemical Separation



High Density Pumped Hydro Storage



Commercializing Ion-Specific Membranes for Critical Mineral Recovery

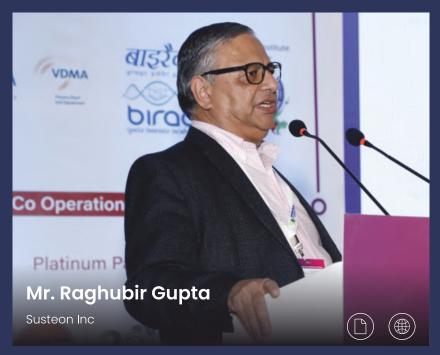


Membrane Nano filtration Technology to reduce Chemical Separation CO2 Emissions by 90%



Single Walled Carbon Nanotubes Coated Membranes for Efficient Desalination

Renewable Chemicals



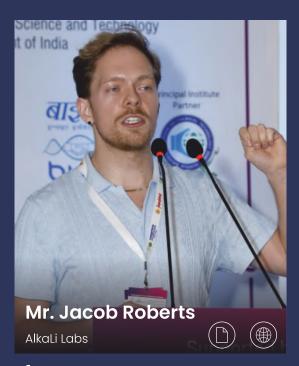
Technology Solutions for Conversion of Carbon Into Fuels, Polymers & other Chemicals.



Next Generation Catalysts for SAF, Chemicals



Production of Renewable LPG (propane)

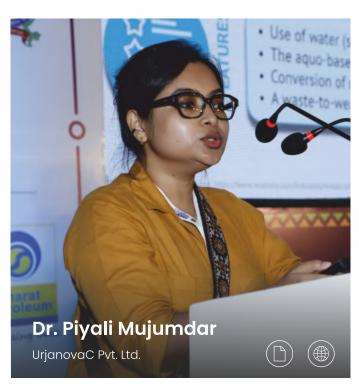


Engineered Microbes to Efficiently Extract Lithium

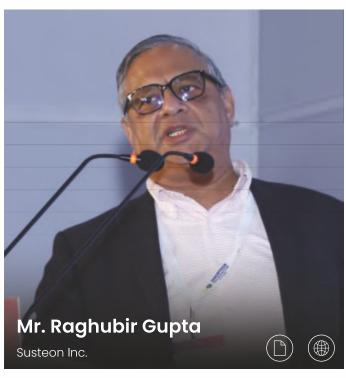
Carbon Capture



CO2 Removal Using Seawater Electrolysis



Advanced Catalyst of Energy Efficient Carbon Capture



Advanced Molecules to Capture Carbon More Efficiently



Commercializing Hybrid Direct Air Capture Technology





Green Hydrogen Using Photo-Electrochemical Technology

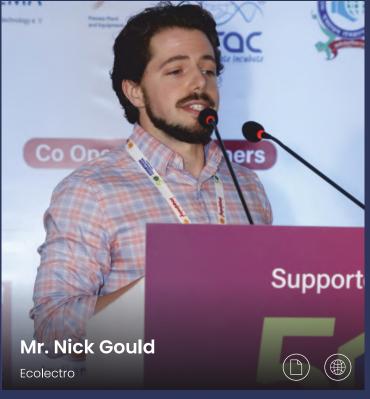


Clean Hydrogen Production with Integrated CO2 Capture





Producing Hydrogen while capturing CO2



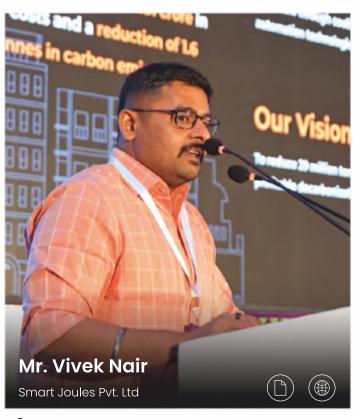
Low Cost Alkaline Exchange Materials Process



Resource Efficiency (Energy)



Insulating Nanomaterial, Aerogels in Multi-Faceted Forms to Serve Thermal Insulation Applications



Cutting Energy Consumption of HVAC Systems
With Innovative Business Models & IOT+AI



Increasing Passive Cooling Efficiency Using Material Innovations



Resource Efficiency (Water)



Molecular Filters for Effluents & Emissions Reduction in Manufacturing Industries



Water Sustainability Solution Provider for Industrial & Commercial Establishments

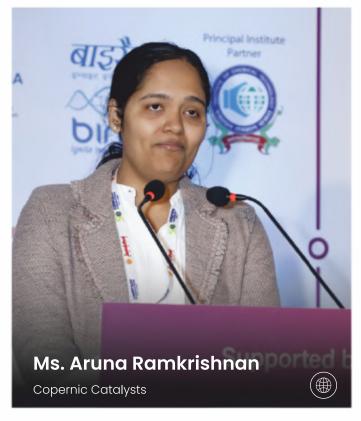


lot Software that Drives Ops Excellence in Water Management

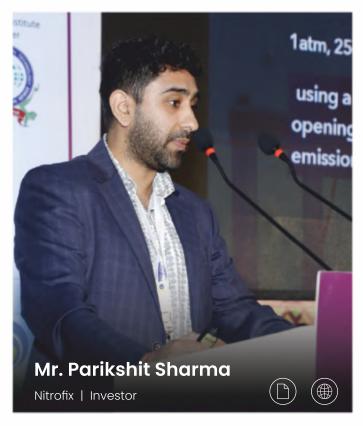


Next Generation Water Treatment technologies

Ammonia/ Fertilizer



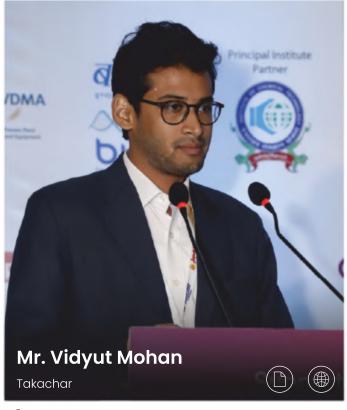
Advanced Catalyst to Reduce Energy Requirement of Haber Bosch Process



Modular & Decentralized Ammonia Generator



Innovating Bio-Solutions for Agricultural, Aqua & Environmental Applications



Biochar as Fertilizer





Biotech Company Shaping the Future of Natural, Non-Toxic Bio-Pesticides.



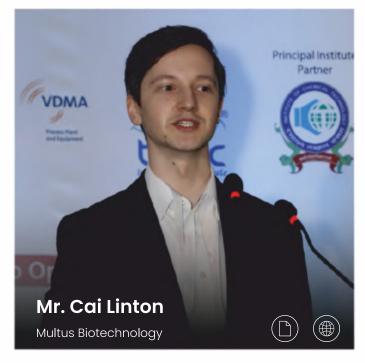
Reducing Emissions from Rice Farming via Tech Interventions



Agricultural Tools and Services for Sustainable Farming



Biomass Value Creation



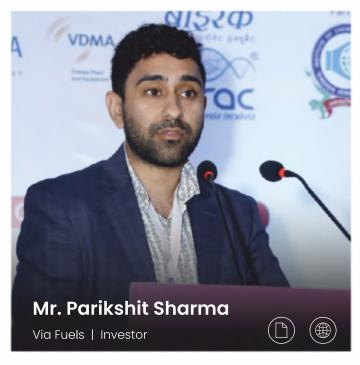
Affordable, Animal Free Growth Media for Cultivated Meat



Offers a Modular, Scalable System For Conversion Of Organic Waste to Green Hydrogen



Alternate Materials Company Manufacturing Biomaterials & Bio-Chemicals

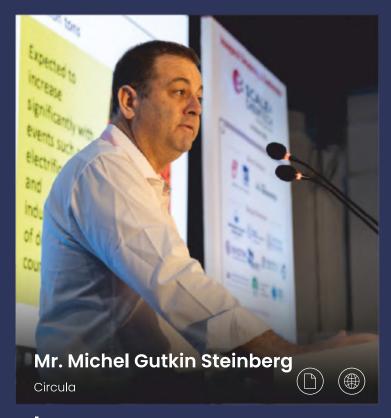


Ethanol to High Value Chemicals Like Jet Fuel





A Scalable Solution to Reduce Clinker Quantity



Clinker Free Cement



Al Platform that Develops Optimum Mix Designs & Predicts Performance



Embedded Industrial CO2 in Concrete



Automated Admixture Dosing to Reduce Concrete Wastage at Site



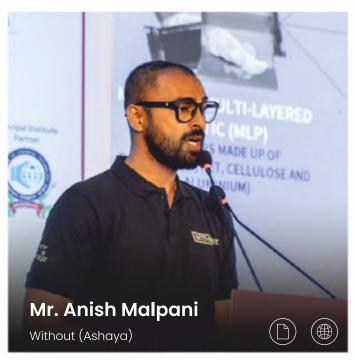
Chemical Recycling



Transforming 'Hard to Recycle' Plastics Into High-Quality Chemical Feedstock



Chemical-Free Lithium-Ion Battery Recycling Technology



Technology that Chemo-Mechanically Recycles
"Impossible-To-Recycle" Plastic Waste Like MLP



Innovative Additives to Ease Plastic Recycling



Carbon Offset & ESG Benefits of Hazardous Waste Disposal Technology

Key Insights & Way Forward:

Early indications suggest that SCALE offered highly relevant connections between stakeholders and a high probability of tangible outcomes. The inaugural edition garnered positive feedback, validating the concept of SCALE through successful logistics and network building efforts. Now, for a deeper dive into relevant stakeholders within the ecosystem, we are actively considering the creation of a non-profit organization focused on SCALE. Our goal is to lead efforts in the global South as a significant ecosystem builder for climate solutions by fostering connections, facilitating collaboration, and driving impactful initiatives.

The SCALE 2024 conference served as a catalyst for driving innovation, collaboration, and policy dialogue in the field of sustainable climate and energy solutions. As we move forward, it is imperative to build upon the momentum generated by the event and continue our collective efforts towards building a more sustainable and resilient future for generations to come.



Continued Engagement

Organize regular engagement activities to sustain momentum and foster ongoing collaboration.



Research and Development

Encourage investment in R&D for the development and deployment of sustainable technologies.



International Collaboration

Strengthen ties with international organizations to collaborate on global initiatives for climate action and sustainability.



Testimonials

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Kevin Tidwell

Managing Director, Grantham Foundation, USA

"As a first-time visitor to India, this was a wonderful way to learn and see so much and meet so many great people. I am very grateful!"

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BB.

Alex Hall

CEO, Concrete AI, USA

"Very well-organized event with a wide range of relevant attendees. Our experience was excellent and resulted in excellent engagement with potential clients, investors, employees, and industry advisors."

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-BB

Prof. Shashank Bishnoi

IIT Delhi, India

"The event provided us the opportunity to find synergies with a variety of other industries that we do not find at a single place." GG

Johann Fernandes

ClimateXCapital, India

"As of today, SCALE is India's only climate-tech event that brings the world's most cutting-edge climate innovations under one roof. Each climate-tech stakeholder in the ecosystem has something to take away from the event. For persona**ll**y, I met <u>many</u> Indian climate-tech startups whom I had only interacted on zoom previously. I also got to hear from exceptional global climate-tech founders."

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RB.

Jeremy Brewer

Managing Partner, Starshot Capital, USA

"Our team was blown away by the quality and quantity of climate innovation in India. SCALE was a phenomenal way to quickly connect with leaders across the Indian climate ecosystem. Attendees were engaged and speakers were thoughtfully curated. We look forward to attending in future years!"

799

GG

Aruna Ramakrishnan

CTO, Copernic Catalysts, USA

"Just wanted to share how much value I have already got out of the conference. I have been able to level up my industry knowledge, and prospective customers have been very open to sharing what they are looking for in a retrofit. A customer also expressed interest in using our catalyst once scaled up, to boost one of their old semi-operational ammonia plants."

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GG.

Markus Lesemann

Sr. Director,
Business Development,
GTI Energy, USA

"Thank you again for giving us the opportunity to attend and present at SCALE and to visit the Aarti's R&D Center. I came away very impressed by the breadth of innovative technologies you're engaged in and are supporting, and I we look forward to more collaborations."

GG

Dr. Gayathri Natarajan

CEO, KrossLinker, Singapore

"SCALE helped us to explore the quality opportunities in Indian market and manufacturing build new and customer connections. This would have taken lot of resources and time if we were to do it ourselves as a foreign startup trying to expand to India. With SCALE, we were able to accomplish more than what we had planned in just 3 days. For a deep tech materials startup, identifying new applications, producing faster and cheaper at SCALE are very crucial. We appreciate the quality of the attendees. In fact, several folks were brainstorming new possibilities with our core technology which we had not thought about.

According to IEA, by 2050, almost half of the solution to global emission will come from technologies that are currently in prototype demonstration phase. It's very important to support such technologies now. We believe that in the future, SCALE will grow to play an important role in identifying the right challenges, connecting the right stakeholders and scaling the right solutions to tackle global climate tech challenges."

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R B

Chetan Krishna

Head of Research & Diligence, Third Derivative, Singapore

"Thanking for inviting us to SCALE and congratulate the team for how well the event went! SCALE 24 had an outstanding array of speakers, particularly innovators, from across the world, delivering high quality and relevant content. It has set a new bar for Indian climate conferences. It was such a great collection of startups and other super relevant stakeholders in the industry. The other events around SCALE were also super well curated and the overall experience was quite enriching, for almost everyone in the ecosystem I imagine. On behalf of D3 - thanks again."

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Parikshit Sharma

Partner, IndieBio's SOSV, USA

"I had a blast at SCALE 24! The event was so well organized with a lot of thought put into the talks and Being able to networking event. wander into the ChemTECH pavilion was very helpful as it allowed me to see the nuts and bolts of industry and the prowess of process and that Indian momentum manufacturing has achieved. Seeing academics, startups, vendors, partnership forums, and corporate clients, and VCs right next to startups is commendable. Makes one think how hard such a gathering is in Silicon Valley!"

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-BB

Amit Tandon

Polycycl, India

"As an attendee of the inaugural SCALE event at Chemtech 2024, we have come back thoroughly impressed by the remarkable platform the gathering provided. By bringing together clean-energy start-ups and industry stakeholders keen on accelerating their market adoption, SCALE served as a vital bridge to build and scale technologies that accelerate energy transition and decarbonization. It was a perfect space for ideas to collide, partnerships to form and breakthroughs to emerge. Kudos to the organizers for creating such a transformative experience!"

GG

Abhijeet Borole

ElectroActive Technologies, USA

"It was a great experience attending SCALE. You and your team put in a lot of effort, and it showed. Great work. I see several avenues to pursue collaborations, etc."

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GG.

Prerna Goradia

Exposome Pvt. Ltd., India

"Our experience at SCALE was very good. We were able to make good connects with people in the same field as ours and got plenty of leads. One thing as a start-up we especially liked, was to meet more startups doing work in the same field like us. It was encouraging to meet them, to exchange notes and motivated us to keep moving forward. Sometimes, startups can get lost among the big established businesses, but at SCALE the experience was different!"

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GG

Mr. Ajay Popat

Ion Exchange, India

"At the very outset let me congratulate both of you and your respective teams for a very impressive SCALE event - the 1st of its kind to promote start-ups and their activities at a scale that I have ever attended! But then honestly, I am not surprised with the outcome, considering the objectives of SCALE and the planning - promotion that went behind organising the event. Well done!"

GG.

Apoorv Garg

CEO, AltM, India

"This was the first public showcase for altM. The panel talks and discussions altM think through helped materials we are building. We diligently scouted and sourced top-notch equipment and raw material suppliers, future paving the way for collaborations and advancements in sustainable manufacturing. The team forged meaningful connections within the vibrant startup ecosystem and established ties with key industry players, fostering a collaborative spirit towards a greener future."

R B

Dr. Nilesh A Mali

Principal Scientist, CSIR-NCL Pune, India

"It was a very nice experience to be part of SCALE24 as a speaker. All sessions of the conference were very thoughtfully arranged. All presentation from various speakers were very informative. All invited start-ups were based on impact-making science and technologies. It was good to listen and connect with them."

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Glatthaar

PV2+ GmbH, Germany

"It was a very valuable event for us as a deep tech startup. We were able to talk to potential suppliers, customers, investors, and students as future employees. Overall, a great experience!"

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RR

Cai Linton

CEO, Multus, UK

"SCALE provided a platform to showcase the cutting edge in sustainable innovation and connect with industry stakeholders from across the world."

BB.

Bhimashankar Wangaskar

CEO, Thermistance, India

"Experience was great. We received different supplier for our raw material, engaged with few prospective customers. Good platform to engage with new customer. Thank you Mirik, Rohan and Sreenivas for the opportunity."

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Gagan Agrawal

Planet Electric Inc, India

"Learnt a lot. Saw the deeptech might on display, loved it. A few engineering collabs on the way. Met a few investors - one might invest. very good output and experience of meeting likeminded folks. Spectrum Impact team really pulled this off in the first attempt itself!"

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Karthik Varada

Venture Capitalist, Beyond Next Ventures, Japan

"A unique gathering tailormade for the objective of enabling scale for climate-tech startups. The sessions were rich in technical discussion and helped me learn about innovations tackling climate change at a global scale. The quality of audience was outstanding."

GG

Devesh Kabra

Ascent Capital, India

"I was honestly surprised by the amount of work that has been happening in the space. The participation was healthy and diverse. I have already mentioned possible areas for improvement above. The exhibition-cum-booth logistics, set-up, time allotted for interaction, scheduling was nearly perfect for such a grand scheme of things. The idea to invest (time, network, capital, etc) in upcoming yet unproven technologies that are currently under-indexed is novel and commendable quite contribution to the overall ecosystem. Kudos to the team SCALE and I look forward to staying relevant alongside you folks!"

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GG

Sam Levac-Levey

Founding Partner, Starshot Capital, USA

"We were delighted by how many interesting startups and innovations there were."

RB.

Shubham Vishvakarma

Metastable Materials, India

"We initiated some very insightful conversations with suppliers and customers, which we hope we will forge into partnerships on future."

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Jens-Peter Wulf

CMBlu Energy AG, Germany

"Very useful conference. Excellent und up-to-date scientific content, perfectly organized."

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BB.

Bharat Jakati

Country Lead India, Intelligent Fluids, Germany

"SCALE 24 is a wonderful initiative, bringing the bleeding edge of climate action to India. As an exhibitor, I was impressed by the interest from visitors, and the quality of startups and innovation that were on display. Recommended to anyone interested in witnessing the deep tech innovation at the heart of global climate action."

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-BB

Triparna Charkraborty

PhD Scholar, IIT BOMBAY, India

"Attending and being a delegate and exhibitor at Scale was truly a remarkable experience. Engaging with industry leaders and fellow enthusiasts provided invaluable networking opportunities and insights into cutting-edge developments. Scale served as an excellent platform for showcasing our capabilities and fostering new partnerships. We eagerly anticipate similar opportunities to connect with industries, as they not only enhance our visibility but also propel us towards mutual growth and innovation."

RR

Jacob Roberts

Co-founder & CTO, AlkaLi Labs, USA

"SCALE@ChemTech was extremely useful for our company. In addition to interesting speakers across climate tech space, made we connections with equipment suppliers, engineering firms. process potential operational partners throughout the ChemTech exhibition hall. In the week following we have already met with potential partners for our demo facility."

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GG.

Utkarsh Rastogi

Digital & BD @ Adani, India

"I was pleasantly surprised by the community that was present at the event. I was able to reconnect with my existing network and make new connections and meet people doing fascinating work. The sessions had a high signal ratio and the focus on science and science-based tools was great."

GG

Anuj Choudhary

Sr. Project Engineer, Shell, India

"It was my first experience for SCALE and ChemTech and it was a whole different experience. I met so many vendors who could benefit my firm directly and indirectly. presentations were about the teething issues world is facing today for climate change and came to know so much about how technology is trying to address it in innovative ways. If I am a company looking or offering solutions for NET ZERO, this is the best place to find your supply chain partners, technology partners, and customers. Would recommend everyone in this space to visit future editions of SCALE."

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GG

Suruchi Rao

Ossus Biorenewables, India

"Fantastic event, especially for climate tech startups. Learnt a lot and no other event had the same turnout or the same spread of stakeholders under one roof! Looking forward to next year's event!"

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Exhibition Photographs

























About **Spectrum Impact**

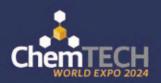


'Spectrum Impact' is the family office of Mr. Rajendra and Mrs. Arti Gogri. Mr. Rajendra Gogri is the Chairman and Managing Director of Aarti Industries Ltd., a listed speciality chemical company. The family office has two distinct pools of capital - a proprietary for-profit pool and a separately identified not-for-profit pool. The objective of the family office is to allocate capital through a broad spectrum of areas like investing in and supporting technologies and businesses that are working towards arresting and reversing climate change, businesses and organizations working towards making health and education more accessible and affordable. Spectrum Impact stands at the forefront of social innovation, leveraging venture capital to catalyze positive change in communities worldwide. With a mission-driven approach, Spectrum Impact identifies and invests in early-stage ventures that address pressing social and environmental challenges. By providing not just financial support but also strategic guidance and networks. Spectrum Impact empowers these ventures to scale their impact and create lasting systemic change. Through rigorous due diligence and a commitment to measurable outcomes, Spectrum Impact ensures that its investments generate meaningful social and financial returns, driving innovation and progress in areas such as healthcare, education, and sustainable development.





About **ChemTECH Foundation**





The **ChemTECH Foundation** serves as a pivotal force in advancing the frontiers of chemical engineering and fostering technological innovation in the chemical industry. Established with a vision to promote research, development, and collaboration, the foundation plays a crucial role in bridging academia and industry to address complex challenges facing the sector. Through initiatives ranging from knowledge sharing platforms to collaborative projects and innovation challenges, the ChemTECH Foundation cultivates a vibrant ecosystem that accelerates the adoption of cutting-edge technologies and best practices. By nurturing talent, facilitating partnerships, and advocating for sustainable practices, the foundation contributes significantly to the advancement of the chemical engineering field and the evolution of a more efficient, resilient, and sustainable chemical industry ecosystem.



