



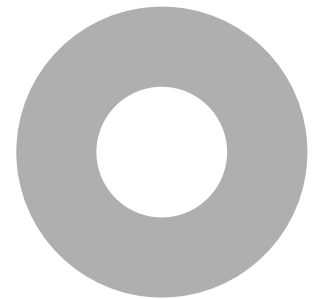


The World's Energy Transition Hinges primarily on Storage

India needs indigenous, scalable, future-ready storage.
That's what we're building.



The Need



Our Product



Our Team

Our Technology

Our Ask

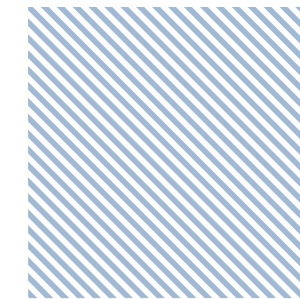
Conventional Battery Chemistry Is a Dead End



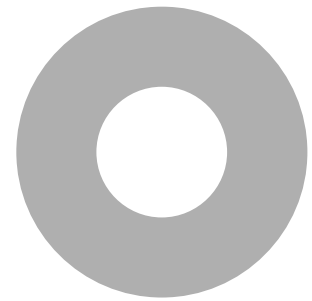
Current storage system technologies are based on imported and expensive supply-constrained raw materials like lithium, cobalt and nickel.



New battery chemistries are dependent on material science innovations. With natural materials and legacy approaches - this will take decades. If at all !!!



Energy storage systems are spiralling towards being the first trillion dollar pa product market in history - driven by the reality of "close to free" solar energy.



The Need

If you read Prof Juvekar's research paper on the ARCl Battery, it will highlight the depth of work and expertise that went into fine-tuning the Li ion chemistry. It took years in a lab - but can be done in days on a computer with AI.

Now we need a tunable battery. Same electrode, different electrolytes for different properties. Same electrode, different lattice structures again for different functionalities. But you cannot have a thousand mfg plants. So the same plant has to make all versions. This was the AI Ask

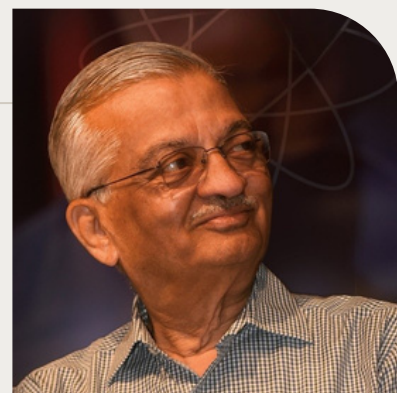
Satish Mehta,
Board Observer, IIT Alumni Council



ARCI

Dr. Anil Kakodkar is the Chairman of ARCI and a Padma Vibhushan awardee. He was Chairman of the Board of Governors of IIT Bombay.

ARCI was given the mandate of building indigenous technology for lithium ion batteries. IIT Bombay was to optimise the material science.



Prof Joglekar at her PhD convocation with Dr Anil Kakodkar



ARCI signs agreement to support Indigenisation of Lithium-Ion Battery Technology fabrication

A fabrication lab for Li-ion batteries will soon be set up in Bangalore in an attempt to boost up-scaling and commercialisation of the technology.

International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an Autonomous R&D Centre of Department of Science and Technology (DST), Govt. of India and Nsure Reliable Power Solutions., Bengaluru signed an agreement for technical know-how transfer and training of personnel to set up the Li-ion battery fabrication lab on November 25, 2021.

The transfer of know-how will be based on the expertise developed in establishing Li-ion battery process and its successful demonstration in electric scooters and solar street lamps by the Centre for Automotive Energy Materials, ARCI under the Technical Research Centre on Alternative Energy Materials and Systems, in line with the ‘Atmanirbhar Bharat Abhiyan’ or ‘Self-Reliant India Mission’.

Dr. Anil Kakodkar, Chairman, Governing Council, ARCI, said that the partnership between ARCI and Nsure Reliable Power Solutions is an important milestone to address challenges associated with climate change and carbon footprints. He emphasised the need of indigenous technology development for sustenance and highlighted the importance of partnership between R&D labs and Industries to take technologies to higher TRLs. He also stressed upon the need for competent human resources, multiple formats to leverage complementary resources of stakeholders in innovation ecosystem and government support for technology upscaling and commercialisation. He said that ARCI-Nsure agreement can be a role model for how such an ecosystem can evolve in the country.

“R&D labs like ARCI should look beyond lithium-ion battery technology and develop technologies involving other alternative energy materials,” Dr. G. Sundararajan, former Director ARCI, emphasised.

“Cost of electrode materials contributes significantly towards the overall cost of LiBs, and as India is heavily dependent on import of these materials, it has become essential to indigenously develop a technology and support industrial organisations in LIB technology,” Dr. Tata Narasinga Rao, Director, ARCI pointed out.

Dr. R. Gopalan, Regional Director, ARCI-Chennai., briefed about the efforts of DST and ARCI in setting up technical research centre on alternative energy materials and systems, especially the Li-ion battery technology for electric vehicles and energy storage solutions and said that this technical know-how transfer is a major milestone at ARCI towards “Atma Nirbhar Bharat Abhiyan”.

Dr. R. Prakash, Head, Centre for Automotive Energy Materials, gave an overview of the Lithium-ion battery technology and work accomplished by ARCI at its Chennai Centre.

Dr. John Albert, CTO of Nsure Reliable Power Solutions, highlighted the need of industry-academia relations for bridging the wide gap between the international and Indian scenario in the Li-ion cell manufacturing technology and said that in this context, ARCI-Nsure partnership shall play a crucial role.

Dr. S.K. Varshney and Dr. R.K. Joshi from DST, Dr. Sanjay Bhardwaj, Head, Technology Transfer, ARCI, and Mr. Chandrakanth and Mr. Suryakanth, Directors, Mr. Ramachandra, Business advisor Nsure Reliable Power Solutions participated in the programme.



Core Thought

“R&D labs like ARCI should look beyond lithium-ion battery technology and develop technologies involving other alternative energy materials.”

Dr. G. Sundararajan
Former Director, ARCI



Multiple Echoes

“Cost of electrode materials contributes significantly to the overall cost of LiBs. As India is heavily dependent on imports, it has become essential to indigenously develop a technology and support industrial organisations in LIB technology.”

Dr. Tata Narasinga Rao
Director, ARCI



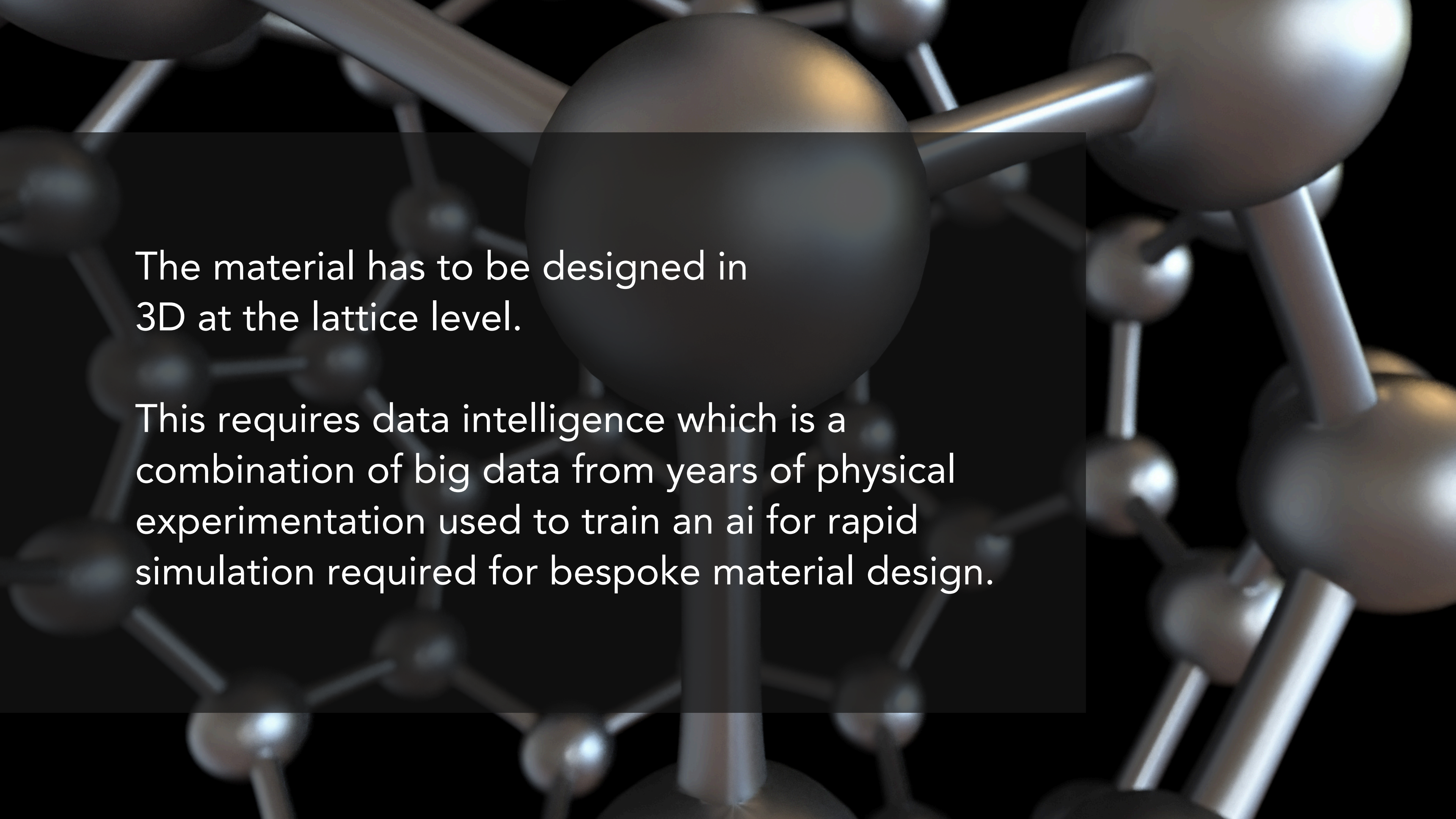
Nano technology

“If you read Prof Juvekar’s research paper on the ARCI battery, it will highlight the depth of work and expertise that went into fine tuning the material science. It also identified surface area per gram as the defining parameter which would limit the performance of a storage system. The ask from the AI was simple. Pick up a proven indigenously available low-cost material and tweak it for varying functionality such that the same manufacturing unit can be used to produce the bespoke materials required for the electrodes.”

Satish Mehta, was part of the jury which selected Go Power as THE technology which had the potential to catapult India to the top of the storage systems league.



Satish Mehta
Board Observer
IITAC for GO Power

A 3D molecular model with a semi-transparent text box. The background is a dark, complex 3D molecular structure composed of numerous spheres (atoms) and connecting rods (bonds). The spheres vary in size and are rendered with a metallic, reflective finish. A large, semi-transparent dark gray rectangular box is overlaid on the left side of the image, containing two lines of white text. The overall lighting is dramatic, with highlights on the spheres and a dark, moody atmosphere.

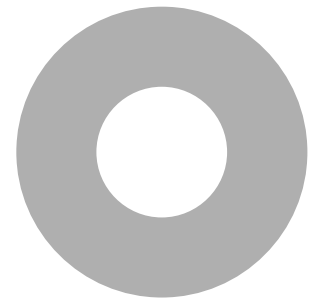
The material has to be designed in
3D at the lattice level.

This requires data intelligence which is a
combination of big data from years of physical
experimentation used to train an ai for rapid
simulation required for bespoke material design.



A sustainable, net-zero energy storage solution which is highly environment friendly and health friendly.

The best use-case for nextgen storage systems is grid storage, stabilisation and safety. Applications like electric vehicles have a large number of different designs, different capacities, different voltages etc. Grid is an easier start point.



Our Product

Yet behind every energy revolution lies a materials bottleneck."

(And that's exactly where our story begins.)

Finally that is why this is Deeptech.

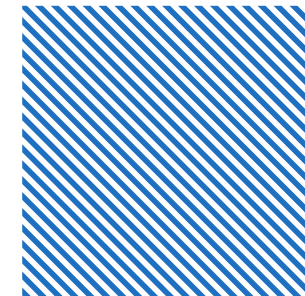
And that is where the comparative advantage emanates from.



Laboratory research spanning 40 years forms the foundation for the MegaCell.



Storage system performance is driven by a few parameters - conduction from the electrodes, rate of movement of ions in the electrolyte, surface area etc.



The three primary characteristics are charging rate, quantum of charge stored/generated and cycle life.

MEGACELL

The Building Block of India's
Storage Future

0.25 kWh per cell | Air-cooled | Stackable |
Modular | India-engineered bespoke materials

[Rs 999/-] plus taxes

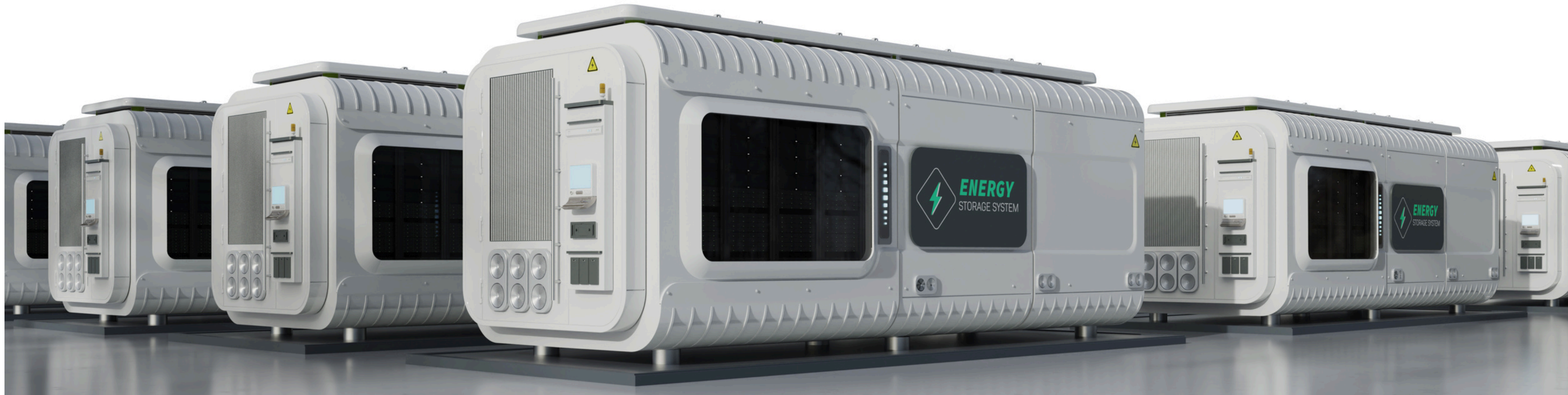
Picture shows a stack with 125 megacells.
Stack like a blade, a rubik cube or any other.



Storage is a Spectrum

with a Lead acid battery on one end and a super-capacitor on the other.

MegaCell can be tuned to operate across the entire spectrum. With designer properties and functionalities.



A 10 MWh outdoor air cooled autonomous storage system in a standard stackable shipping container capable of being deployed in a desert or electric substation at Rs 2.5 crores.





Containerised Deployment

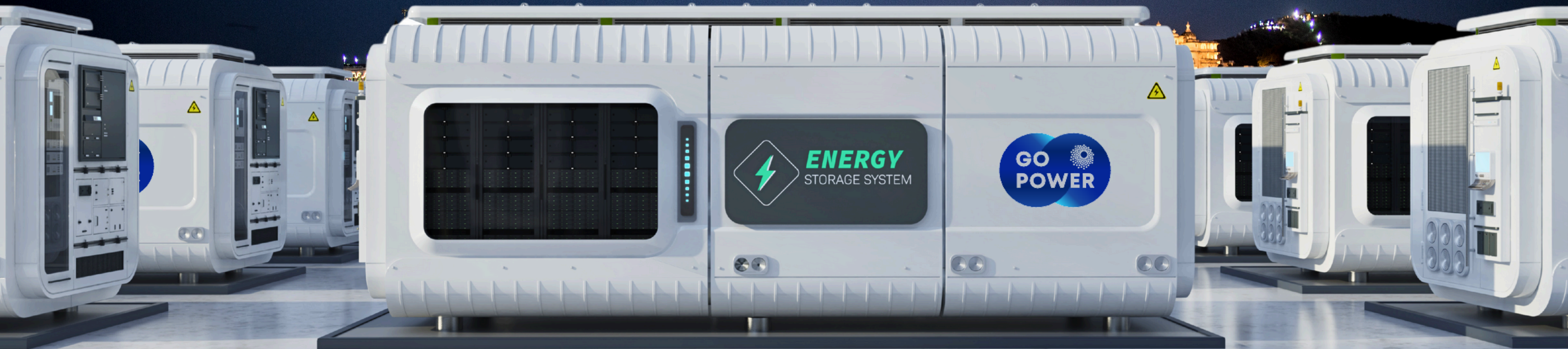
Artistic representation of the MegaBattery — a grid-optimised energy system built from MegaCells. Housed in a 7-metre bus-sized body, the MegaBattery is modular, mobile, and wheel-mountable. Constructed using ultra-light corrugated stainless steel and aluminium, each system can deliver upto 2.5 MWh of high-efficiency storage.

MEGACELL

AFFORDABLE

SCALABLE

DIFFICULT
TO REPLICATE



1 Affordable

Lower Total Cost

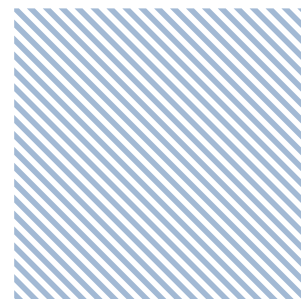
On commercial launch:

USD 30 per KWH capital cost of megacell | 98% round-trip efficiency

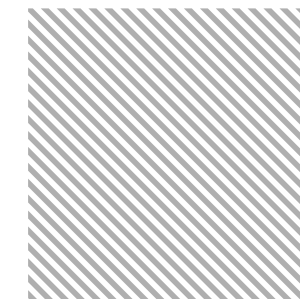
3x cycle life of LFP | Air-cooled even in a desert | Upto 50C charging



Lower the capital cost, longer the cycle life, faster the charging, better the round trip efficiency - lower the total cost (LCOE)



Current battery systems offer ~92% round-trip efficiency, require cooling, last 3–5 years with fast charging, with a capital cost of \$100/kWh.



MegaCell aspires a 10x improvement in price performance over existing options.

2 Scalable

Within 3 years of Launch:

USD 15 per KWH | 99% round-trip efficiency

10x cycle life of LFP | Air-cooled even in a desert | Upto 100C charging



The price performance of purely chemical systems like conventional batteries does not go down in future depending on improvements in manufacturing process.



By using a synthetic bespoke material and extensive AI control based on specialised micro-electronics, it is possible to continuously improve price performance.

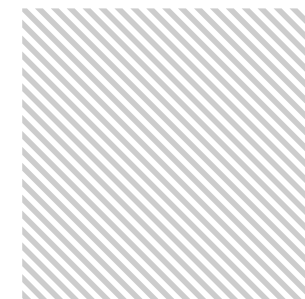
3 Moat Around Castle

» Difficult to Replicate

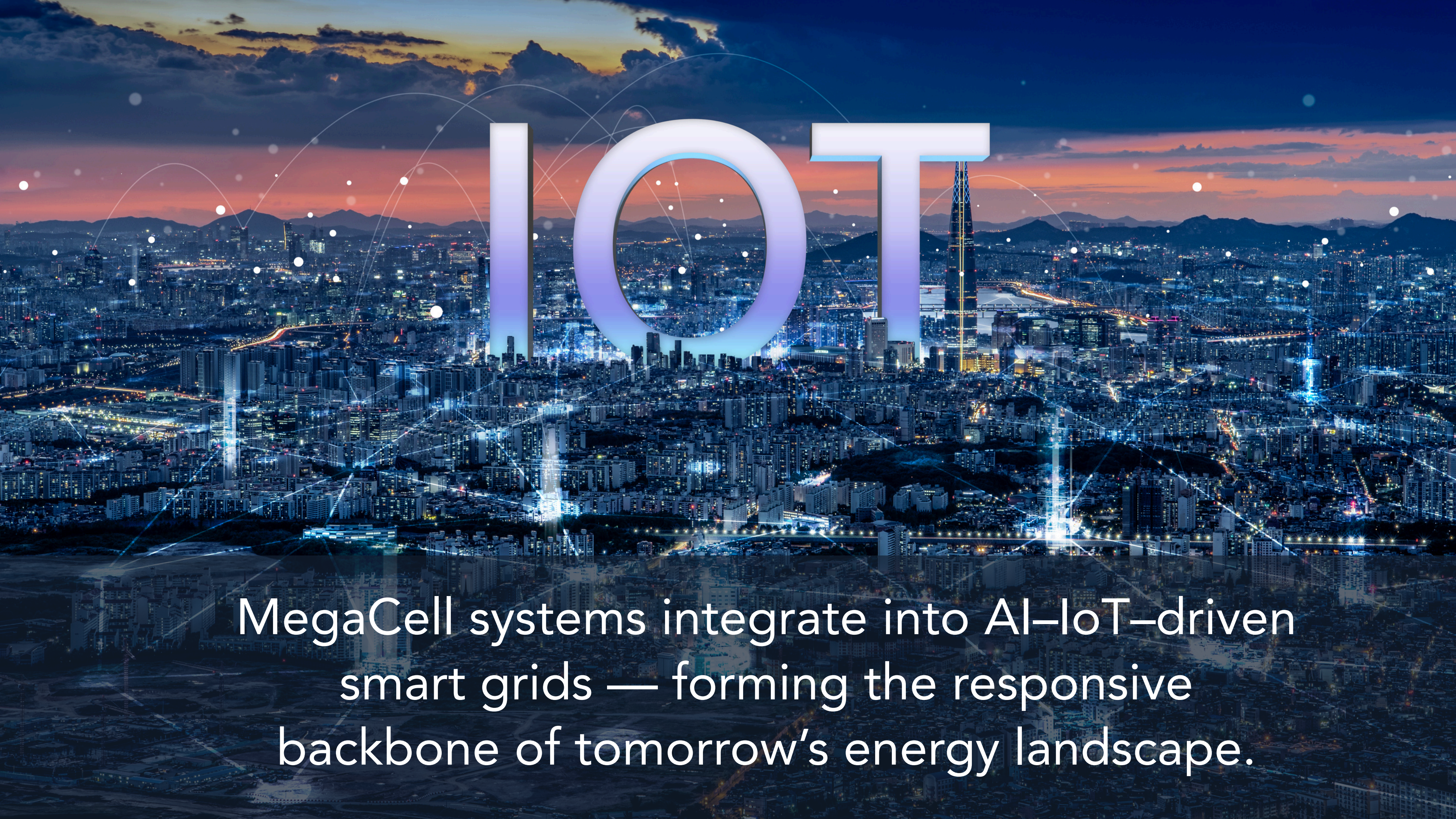
As the MegaCell product range is still to be patented, it is not possible to reveal precise technical details.



The need for secrecy is only till the manufacturing equipment has been perfected.

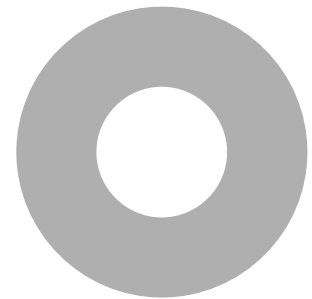


Thereafter, without access to the equipment and operating software, it would be extremely difficult to replicate the functionality.

A night cityscape with a glowing IoT logo and a network overlay. The background is a panoramic view of a city at night, with lights from buildings and streets. Overlaid on the city is a network of white dots connected by thin white lines, representing a smart grid or IoT network. The dots are scattered across the city, with some clusters and some isolated points. The lines connect these dots, forming a complex web. In the center of the image, the letters 'IoT' are displayed in a large, 3D, white font. The 'O' is a circle, and the 'I' and 'T' are vertical bars. The letters have a slight glow and are positioned in front of the city and network overlay. The sky is dark with some clouds, and the overall color palette is dominated by blues, purples, and whites from the city lights and network overlay.

IoT

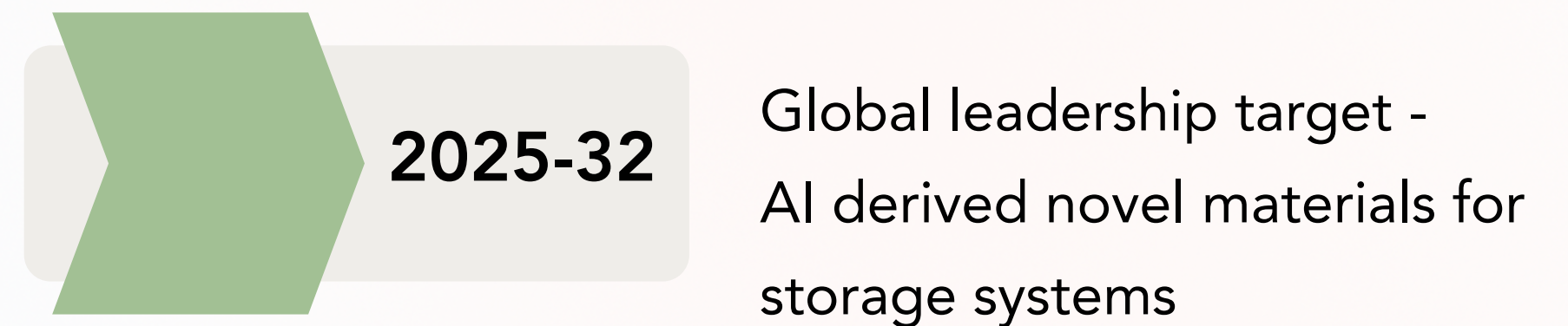
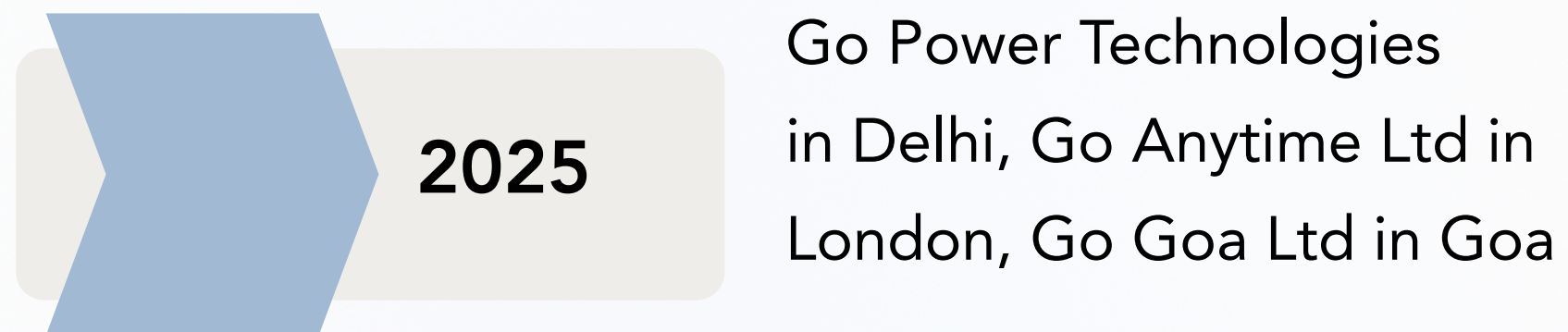
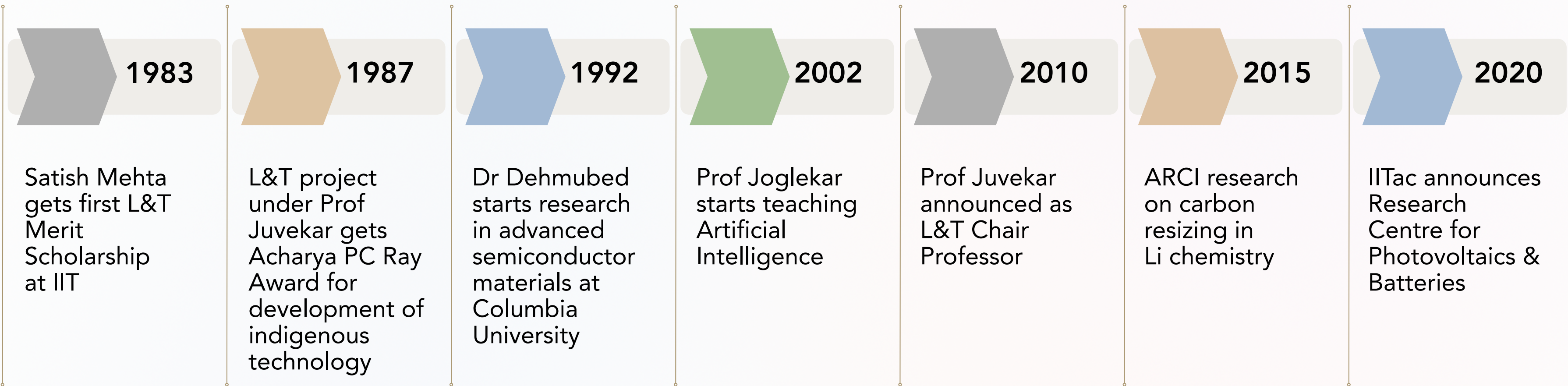
MegaCell systems integrate into AI-IoT-driven smart grids — forming the responsive backbone of tomorrow's energy landscape.



Our Team

Storage system design is an inter-disciplinary field. Battery is only one part of the overall system. DC DC converters, smart grid AI are as important as the battery chemistry. The Go Power team comprises of an AI expert, an eminent nanotechnology expert and a semiconductor expert.





Go Power Promoters



Dr Jyoti Joglekar
Distinguished Fellow -
Artificial Intelligence



Dr Vinay Juvekar
L&T Chair Professor - IIT
Bombay



Dr Rohinton Dehmubed
Distinguished Fellow -
Semiconductors

Alumni Mentor



Deputed by the Global Board of the IIT Alumni Council to guide the startup through setup, licensing, funding, and strategic alliances.

The IITAC initiatives stand on the shoulders of mentors and mission-driven engineers — united by the sovereign vision of nation-building.

Satish Mehta

Alumni Mentor

Life Fellow, IIT Alumni Council



First recipient of the L&T Merit Scholarship at IIT (1983–87), Satish worked under Prof. Juvekar for his BTech project and was awarded the Acharya P.C. Ray Award by the President of India in 1987 for contributions to fertiliser equipment and process development at L&T—alongside Prof. Juvekar, Prof. R.A. Mashelkar, and Prof. M.M. Sharma.

RESEARCH MENTOR
AI & CV

**Jyoti
Joglekar**





Professor Jyoti Joglekar holds a Bachelor of Electrical engineering from Walchand College of Engineering Sangli, a Master of Computer Engineering from Mumbai University and a PhD in Computer Vision from IIT Bombay. She has over 38 publications in international journals, international conferences as well as an international book publication.

Joglekar is a reviewer of reputed international journals such as IEEE Transactions on Geoscience & Transactions on Remote Sensing (TGRS), IEEE letters, IEEE Access, IET etc. She has three patents, two copyrights and six book chapters in Springer Nature.

Joglekar has been honoured as Fellow member of IETE (Institute of Electronics and Telecommunication Engineering) and is a Distinguished Fellow on Computer Vision and Imaging AI at the PanIIT Institute.

Joglekar has undertaken sponsored research for NESAC, DoS, Meghalaya in the area of image acquisition and processing using Swarm of Autonomous UAVs (Drones) for various surveillance and mapping operations that deploy holographic imaging techniques.

She is the Principal Investigator (PI) and focal officer for TDP (Technology Development Partner) research projects with NESAC, ISRO. She played a role as an expert for funded DST-RFBR research projects.

Joglekar won the second prize for her paper presentation at INAC-4 conference by ISSE and ISRO held at SAC, ISRO, Ahmedabad in September 2019.



Joglekar is an active member of the SIH Innovative Product Drive Ecosystem and has mentored three of the students' winning teams in Smart India Hackathon (SIH) 2018 and 2019.

Joglekar is the co-author of the widely prescribed "Internet of Things" engineering textbook published by Oxford University Press. She has over 25 years of teaching experience to undergraduate and postgraduate students.

Joglekar is an active research volunteer with IIT alumni Council since April 2020 and is working on several cutting-edge technologies in the area of ultrasound imaging and quantum computing being deployed by social initiatives of the Council. Her work continues to bridge the lab and the field — ensuring integrity across science, operations, and market readiness.



Internet of Things

Surya S. Durbha
*Professor,
CSRE, Indian Institute of Technology Bombay (IITB)*

Jyoti Joglekar
*Professor,
Department of Computer Engineering
K. J. Somaiya College of Engineering (KJSCE)
Somaiya Vidyavihar University (SVU)
Mumbai*

OXFORD
UNIVERSITY PRESS

Prof Jyoti Joglekar co-authored Internet of Things, which is currently used as a textbook. It underscores her proficiency in AI and IoT integration, shaping innovative energy solutions, including Megacell initiative.

“Technology can generate money, but money cannot always buy technology”

Developing a core platform technology is more important than generating short-term export revenue



Prof Jyoti Joglekar is the Distinguished Fellow for Holographic Imaging and AI. She is a resident of Mumbai and has spent close to 20 years as a researcher in computer vision, photogrammetry, remote sensing, image manipulation and analytics. Most of her work is oriented towards real world applications that range from developing photogrammetric methods for applications ranging from predicting forest fires to digital elevation models on water resources to 3D scanning in real time for lossless transmission. In an interview with the Indian EYE, Prof Joglekar spoke about her life journey and achievements. Excerpts:

Professor, congratulations on being nominated as a Distinguished Fellow in the area of Holographic Imaging and AI. Could you briefly explain this subject and your role in it?

In a simplified language, Holographic imaging is perceiving depth information for developing a 3D model of an object or a scene. We do this from a series of images, by extracting information hidden in the parallax. It is similar to how the human brain uses images from two eyes in stereo vision to develop a 3-D structure – by using the images captured from two different view-points. This kind of information is critical for applications like autonomous cars or in robotics where assessing depth is very important. I have been working in technologies such as



PanIIT Fellowship Awardees Q&A with Dr. Jyoti Joglekar

Computer Vision, Holography and 3D DEM generation for around twenty years. I was thus rightly positioned to develop innovative architectures based on these platform technologies. Since we did not have access to such technologies which originate from the defence and space sectors in developed countries – I started from scratch. I have focused on this domain exclusively. It became my passion and then I realised I probably knew about as much if not more than my peers in developed countries. I used this fundamental research to develop innovative applications in a wide range of areas including but not limited to agriculture, healthcare, urban planning, climate change assessment, transportation planning, mining and economic activity assessment. As an academician, I had the support of a large number of students who had to be given projects. These were

BTech students, MTech and even PhD students. So, there was a massive multiplier effect which required negligible funding.

In more ways than one, you represent the new face of the Indian academic researcher – electrical engineer, lady, researcher, strong application understanding, academician, research publication author in high index journals. You have become some kind of a role model for other academicians. What is your advice to other ladies who may want to follow in your footsteps?

Certainly, career building as a researcher is a tough task for a lady as she often needs to contribute substantial time for family issues. Because of this, they often feel that they are left out. Some colleges have age restrictions for appointment of faculty for example. In my opinion, proper time management and domain focus can easily compensate for this delay. It should

not be considered as a hurdle. The key is domain focus so that you can keep adding to your expertise vertically.

A career in research is very different from say one in industry as an MBA – research is all about depth and not so much about width. I think, more and more lady researchers should come forward to develop a complete stack of technologies, right from fundamental research and basic hardware components so that totally indigenous, economical and innovative application & product development can be accelerated.

A lady academician can play an important role to guide and motivate her students. She is a caring personality by nature and can inculcate such interests in her students. I treat my student just like my own child – and I am equally strict as well. This is something that a mother does better. Because she values the flexibility of an academic job, she can do long runway projects without necessarily seeking monetary benefits. This makes here suited for fundamental research which is the base of any innovative platform stack. You need a solid foundation to build a tall building. Often, we don't see the time that goes into digging a deep foundation – the world only sees the height of the building. But without a strong foundation, the building will fall. And good basic education, a thorough understanding of the core concepts and the fundamental science is that foundation.

Why did you prefer to stay back and work in India? In your niche area, global demand must be high...

Continued on Page 23... >>

RESEARCH MENTOR
INTERFACIAL ENGG

**Vinay
Juvekar**





Professor Juvekar has had a significant impact on the chemical engineering community as an outstanding teacher, gentle mentor, excellent researcher, and, above all, as a very warm and affable person.

Juvekar has published highly insightful work in many research areas, with a significant number of these manuscripts appearing in Industrial & Engineering Chemistry Research.

Prof. V. A. Juvekar obtained his B. Chem. Eng. (1970) and Ph.D. Tech (1976) at the University Department of Chemical Technology (UDCT) Mumbai. He then worked as an Associate Lecturer (1971–1974) and Lecturer (1974–1977) at UDCT, Mumbai (now ICT, Mumbai).



Prof. Juvekar then worked in the chemical industry from 1977 to 1984, first as a Senior Chemical Engineer (1977–1979) and then as an R&D Manager (1979–1982) at Industrial Processes (Maharashtra), Ltd.

Juvekar served as a Full-Time Consultant at Herdillia Chemicals (1983–1984).

Professor Juvekar started his academic career at IIT Bombay in 1984 (Assistant Professor, 1984–1990; Professor, 1990–2017; IIT Bombay–Emeritus Fellow, 2017 to present). He was bestowed the Fellowship of the Indian National Academy of Engineering.

He was also a recipient of Moulton Medal from the Institution of Chemical Engineers UK (1977), the Herdillia Award for excellence in basic research in chemical engineering (1996), and the L&T Chair Professorship (2012–2015).

As far as his research areas are concerned, Prof. Juvekar has focused broadly in four areas, viz. heterogeneous chemical reaction engineering, electrochemical engineering, colloid and interfacial engineering, and electrohydrodynamics.

Juvekar has graduated 30 Ph.D. and 72 Master's students (M.Tech. Dual Degree and Foreign Nationals).



RESEARCH MENTOR
ADVANCED MATERIALS

Rohinton Dehmubed





Dr. Rohinton Dehmubed has over 30 yrs. experience in engineering design and product development in the field of telecommunications, RF, optics and compound semiconductors across multiple continents.

Dr. Dehmubed holds a Ph.D. in Electrical Engineering from Columbia University in the field of Integrated Optics and a B. Tech. in Electrical Engineering from the Indian Institute of Technology in Bombay. Dr. Dehmubed has published several technical papers and holds multiple patents.

Dehmubed co-founded OPEL Inc. in 2001 which got listed on the Toronto Stock Exchange (currently trading under TSX: PTK) in June 2007.



As Vice- President in charge of product development at OPEL Dehmubed led the team to develop a complex III-V epitaxy for monolithic opto-electronic integration of optical communication devices for military and commercial applications.

Dehmubed has secured funding from private investors and government bodies and was on the board of directors of OPEL Inc. from 2005 until his departure in early 2007. Since then, he has been a mentor and investor in Cheekotel Venture Fund, a long-horizon deep tech fund focusing on markets in India and other emerging markets, and is a member of its advisory board.

From 1997-2001, Dehmubed worked at Transwitch Corporation in Shelton, CT, (NASDAQ: TXCC), where he was in charge of system development, definition and testing of high speed next-generation communication chipsets from DS3 (44Mhz) to OC-768 (40 GHz).

Prior to Transwitch, he worked in the field of free-space optics and plume measurements at Electro Optical Sciences and Contel Corporation. During his time at Contel, he tested the earliest Erbium Fiber Optical Amplifiers and Semiconductor Optical Amplifiers for the Fiber-in-the-Loop application.

Currently Dr. Dehmubed is a co-founder of Rubitel Inc., a startup specializing in electronic tamper evident packaging. In his spare time he likes to make gourmet chocolates and cheese.

IIT Alumni Council confers Distinguished Fellowships to four eminent researchers

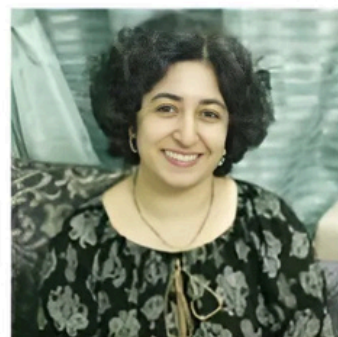
PanIIT grants honor on four for their original contribution to the development of key platform technologies



Dr. Kapil Talwar



Dr. Arindam Bose



Dr. Jyoti Joglekar



Dr. Rohinton Dehmubed

OUR BUREAU

New Delhi

IIT Alumni Council announces institutional strengthening of PanIIT Institute, an independent and autonomous partner alumni organization engaged in the development of an end-to-end deeptech Research Ecosystem in India – through the appointment of Distinguished Fellows in four key areas of Applied Science and Engineering.

"Excellence, nor mere competence is the hallmark of a Distinguished Fellow. The Distinguished Fellow program of the PanIIT Institute identifies, evaluates and awards the most distinguished alumnus from among i2Net institutions in each area of applied sciences and engineering. The focus is not just on publication of re-

search papers and filing of patents but on actual commercial implementation of key platform technologies that find application across multiple products or services," said Ravi Sharma, President and Chief Volunteer of the IIT Alumni Council.

Dr Jyoti Joglekar has been selected by the jury as the most eminent alumnus in the area of holographic imaging and related AI & ML technologies. She has a PhD from IIT Bombay in Imaging AI & Analytics and is a leading global researcher in photogrammetry and remote sensing. Bleeding edge technol-

ogies developed by her find applications in a very wide range of industries from Agritech and disaster management to Health-Tech and next generation diagnostics. "Fellowship is an honor for an academician. Thank you so very much for recognizing my contribution and honoring me for the same," added Dr Jyoti Joglekar.

Dr Rohinton Dehmubed received his B. Tech in Electrical Engineering from IIT Bombay and has a PhD in Electrical Engineering from Columbia University. He has led the development of core chipsets

based on advanced materials such as Gallium Arsenide with newer options relying on Gallium Nitride and substrates such as diamond and sapphire. The chipsets are fabricated using epitaxies with crystal growth technologies such as Molecular Beam Epitaxy which could involve up to 36 material layers and sub-nanometer scale, multiple quantum well layers. "For any technologist, It is indeed a matter of pride to receive the Distinguished Fellowship from the IIT Alumni Council"

Dr Kapil Talwar has a PhD in Chemical Engineering from Washington University, Saint Louis, USA. He has a BTech in Chemical Engineering from IIT Bombay. He has been a researcher, serial entrepreneur and angel investor. He is involved in cutting edge research

Continued on next page... >>



IIT Alumni Council confers Distinguished Fellowships to four eminent researchers

companies both in India and overseas in the area of next generation catalysts that are used in the emerging bio economy and green chemistry-based substitutes for mainstay process plants. "Green chemistry can be very profitable even in India, if the regulators ensure a level playing field" added Dr Talwar.

Dr Arindam Bose is a silver medallist of IIT Kanpur, 1975 batch. He has spent over forty years in industry, finally as a Leader in Biotherapeutics Pharmaceutical Sciences at Pfizer Worldwide R&D. His area of specialization is monoclonal antibodies that have been found to be useful for treating many diseases such as arthritis, fatty liver, cancer and others which had no cure in small molecule based pharmaceutical products. He has personally led the development of several monoclonal antibodies that have received FDA approvals and was selected as the most eminent IIT Alumnus in this fast-emerging domain. "Biologics is one industry that India can lead in, especially monoclonal antibody based biotherapeutics", said Dr Bose.

The PanIIT Institute awards three types of Fellowships – Distinguished Fellowships, Life Fellowships and Honorary Fellowships. Distinguished Fellowship is the highest membership honor that the PanIIT Institute bestows upon its members. The Distinguished Fellowship is awarded to PhDs who have made significant contributions for the development of key platform technologies.

These technologies should have been successfully commercialized for applications across a wide range of products or services. Life Fellows are eminent industry experts. Honorary Fellows are global achievers who are not alumni of the IITs or

other India Innovation Network institutions.

Dr. Jyoti Joglekar

Dr. Jyoti Joglekar holds a Bachelor of Electrical engineering from Walchand College of Engineering Sangli, a Master of Computer Engineering from Mumbai University and a PhD in Satellite Image Analysis from IIT Bombay. She has presented her research work in several International conferences of repute such as the International Society of Photogrammetry and Remote Sensing (ISPRS). Technology developed by her was an important constituent of some of the core data analysis applications developed with Chandrayaan-1 data by SAC, ISRO, Ahmedabad. She has over 25 publications in international journals and international conferences of repute. She is a reviewer of reputed international journals such as IEEE Transactions on Geoscience & Transactions on Remote Sensing (TGRS), IEEE letters, IEEE Access, IET etc. She has been honored as Fellow member of IETE (Institute of Electronics and Telecommunication Engineering) and is a Life Fellow on Computer Vision and Imaging AI at the PanIIT Institute. She is a member of the Board of Studies, Department of Computer Engineering, Mukesh Patel school of Technology, NMIMS, Mumbai, the Department of Information Technology, Cummins College of Engineering, Pune and Science college at SVU.

Dr Kapil Talwar

Dr Kapil Talwar holds a BTech in ChE from IIT Mumbai and a MS & PhD in Chemical Engineering from Washington University at St Louis. He has an MBA from Melbourne Business School. He has been a

serial entrepreneur in the technology space having exited several start-ups to established Industry leaders.

Experience is concentrated around the confluence of business, science and technology, and include broad exposure to ancillary functions that support business growth. Professional Experience: Startup management, development and growth, capital raising, financial modelling and budgeting, investment due diligence, market strategy development, business development, corporate strategy, product planning, operations, program management.

Dr. Rohinton Dehmubed

Dr. Rohinton Dehmubed has over 30 yrs. experience in engineering design and product development in the field of telecommunications, RF, optics and compound semiconductors across multiple continents. He co-founded OPEL Inc. in 2001 which got listed on the Toronto Stock Exchange (currently trading under TSX: PTK) in June 2007. As Vice-President in charge of product development at OPEL he led the team to develop a complex III-V epitaxy for monolithic opto-electronic integration of optical communication devices for military and commercial applications. He has secured funding from private investors and government bodies and was on the board of directors of OPEL Inc. from 2005 until his departure in early 2007. Since then, he has been a mentor and an investor in Cheekotel Venture Fund., a long horizon deeptech fund focusing on the markets in India and other emerging markets and is a member of their advisory board. From 1997-2001, he worked at Transwitch Corporation in Shelton, CT, (NASDAQ: TXCC), where he was in

charge of system development, definition and testing of high speed next-generation communication chipsets from DS3 (44Mhz) to OC-768 (40 GHz). Prior to Transwitch, he worked in the field of free-space optics and plume measurements at Electro Optical Sciences and Contel Corporation. During his time at Contel, he tested the earliest Erbium Fiber Optical Amplifiers and Semiconductor Optical Amplifiers for the Fiber-in-the-Loop application.

Dr. Arindam Bose

Dr. Arindam Bose retired from Pfizer Worldwide Research & Development in 2016 after 34 years in leadership roles in bioprocess development and clinical manufacturing. Dr. Bose's final position at Pfizer was Vice-President, Biotherapeutics Pharmaceutical Sciences with responsibility for external sourcing, competitive intelligence and external influencing as well as for executing the technical development plan for Pfizer's entry into biosimilars.

He is widely recognized as a Key Thought Leader in the biopharmaceutical industry. Dr. Bose was elected to the US National Academy of Engineering for innovations in biologics manufacturing. Dr. Bose currently provides consulting services in bioprocessing to several start-up biotechnology companies including a part-time process development management role at Akero Therapeutics. He received a Ph.D. in chemical engineering from Purdue University, a M.S. from the University of Michigan, Ann Arbor and a B. Tech from the Indian Institute of Technology, Kanpur.

Dr Arindam Bose has been a key mentor and coach to the engineered biomolecule initiative of the IIT Alumni Council.

ALUMNI MENTOR
DEEPTech | IMPACT FUND

**Satish
Mehta**





Satish Mehta is a veteran investment banker with deep roots in India's financial, regulatory, and startup ecosystems. Over the past three decades, he has specialised in funding deep tech and high science ventures while shaping the social impact investment landscape.

Deeply committed to nation-building through collaborative intellect, Satish has championed the convergence of science, capital, and public good. His current focus lies in enabling scalable platforms that translate breakthrough research into real-world solutions—particularly in healthtech, renewable energy, and mobility.

Mehta was instrumental in establishing key institutions of national importance including TRAI, SEBI, SIDBI, BSNL, and the IIT Alumni Council. He served on the Disinvestment Commission and led revitalisation mandates under BIFR during India's economic liberalisation.



Over the years, Mehta has helped shape India's startup and capital markets landscape —advising on private equity, SME listings, and alternative investment platforms.

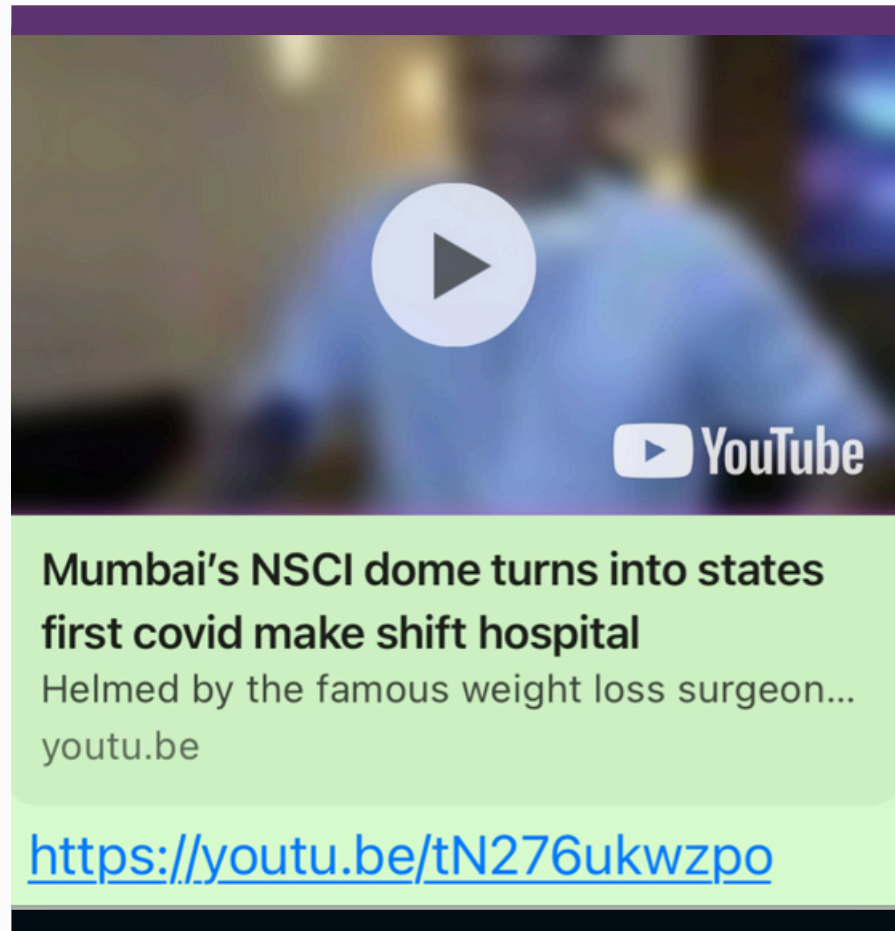
He has served on investment committees of pioneering funds like Cheekotel Capital and Digital India Fund, backing innovations in AI, semiconductors, and quantum tech.

Known for aligning deep science with sound compliance, he remains a trusted mentor to researchers and institutions addressing complex societal challenges.

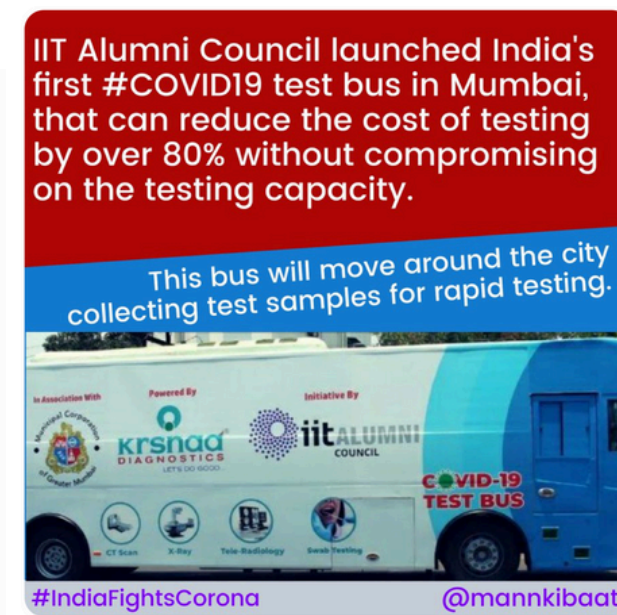
A founding force behind the IIT Alumni movement in the 1990s, Mehta continues to anchor its flagship initiatives, including the IIT Alumni Council and the ₹21,000 crore MegaFund. Mehta was part of the IIT COVID Task Force and continues to serve on several strategic working committees across public and private sectors.

Mehta is a certified investment banker and professional cinematographer, and serves as Head of Compliance & Regulatory on the investment committees of several PE funds. Mehta is also a visiting faculty and recognised authority in photogrammetry and cinematography.

An alumnus of IIT Bombay (BTech, Chemical Engineering) and JBIMS (MMS, Operations Research), he continues to bridge science, finance, and impact at the highest levels.



Set up with a target outlay of Rs 700 crores, the C19 Task Force - under the chairmanship of the Dr Vijay Raghavan and Dr Arindam Bose - helped create 100 hour projects faster than anywhere in the world. NSCI Dome, led by Dr Muffi Lakadawala was one of them.



The mass genetic testing initiative of the C19 Task Force helped create cost effective indigenous testing capacity.

Go Power Technologies Pvt Ltd



is an Indian Startup, selected as the premier partner for the AMAT AI platform of the IIT Alumni Council

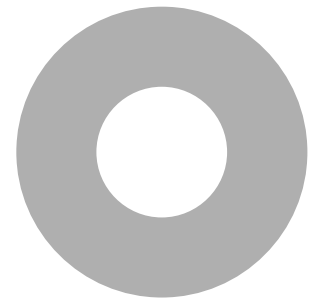


To develop bespoke materials from earth-abundant materials (carbon, silicon, thorium and iron) as import substitutes (for lithium, nickel, molybdenum, cobalt and uranium).



Awarded by the IIT Alumni Social Impact Fund as one of the five most disruptive innovations which could become world leaders in their space - the other four being micro nuclear reactors, coal to gas conversion, high efficiency solar cells and digital cash.

Mentor Panel



Our Technology

It began quietly — in a lab corner where carbon particles were studied not just as materials, but as enablers of memory, conductivity, and precision. It started with a research project for ARCI. And involved optimising the conducting particles of carbon in lithium-ion batteries, originally intended for electric two-wheelers.

This design lineage became part of India's early EV ecosystem — and was further developed for scalable, indigenous cell manufacturing.



AI applications

help accelerate design and production of novel bespoke materials based on earth abundant raw materials through suitably designed frameworks.



These include:

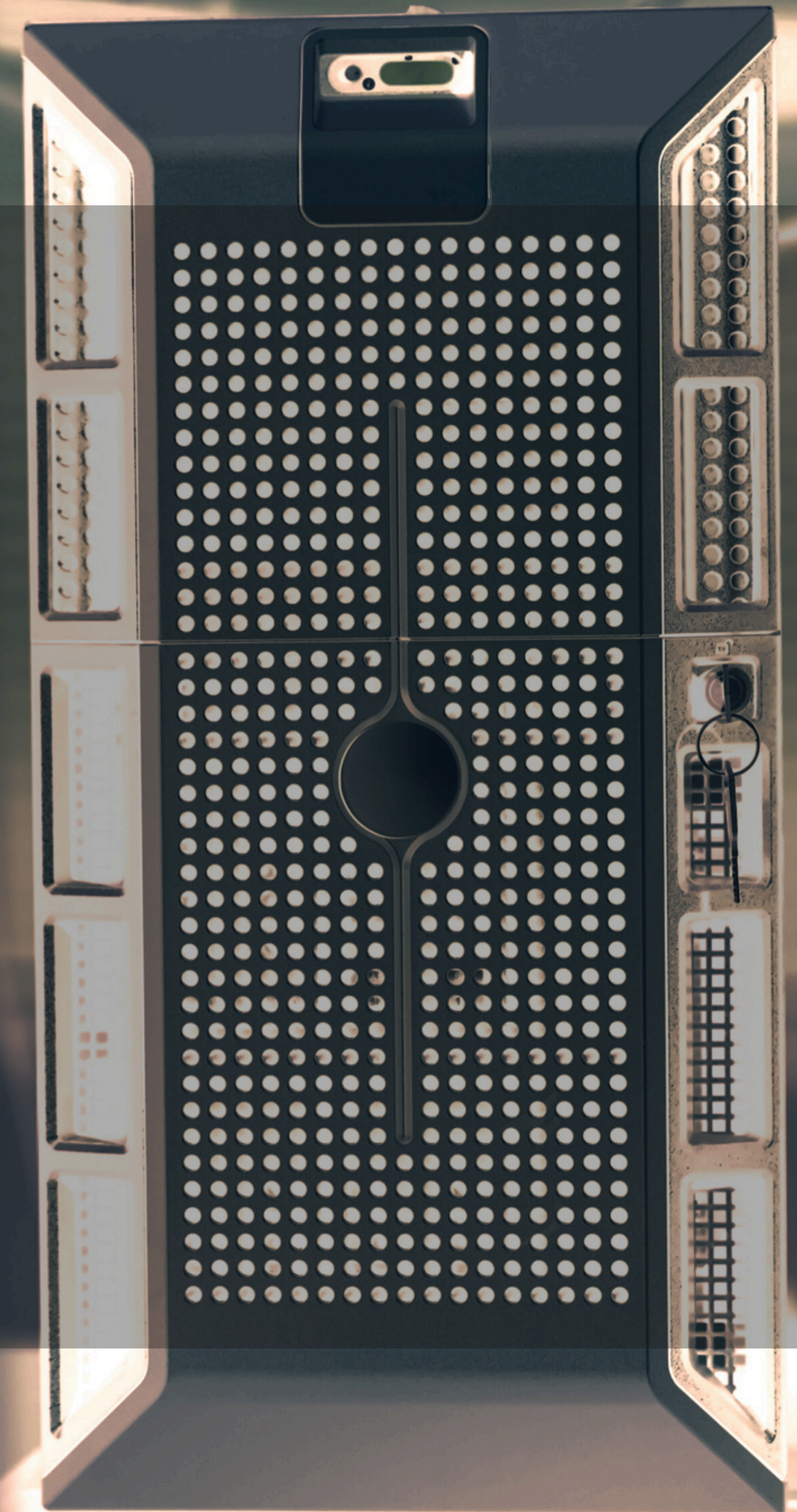
- . Heuristic search
- . Molecular dynamics simulation
- . Density function theory
- . With the AMAT AI platform (under alpha testing) as the foundational AI model being trained.

AI-designed storage block

Reimagining Energy Storage at the Molecular Level

We've applied data intelligence and proven chemical engineering methods to rearchitect energy storage by:

- Using a bespoke material base
- Modeling properties via AI-trained simulation
- Customising structure and performance by application use-case

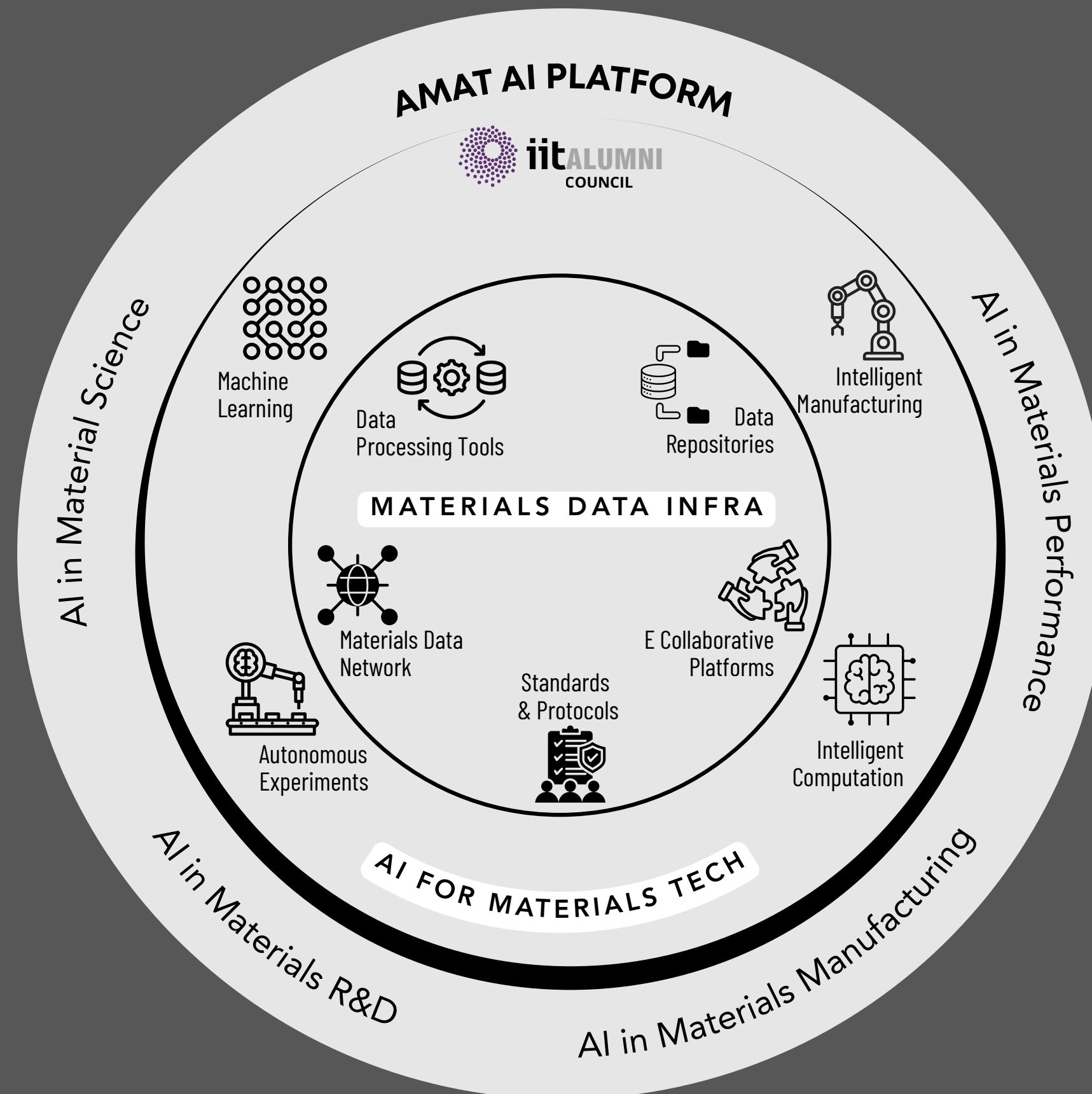


AMAT AI Platform*

The Brain Behind Future Materials Evolution

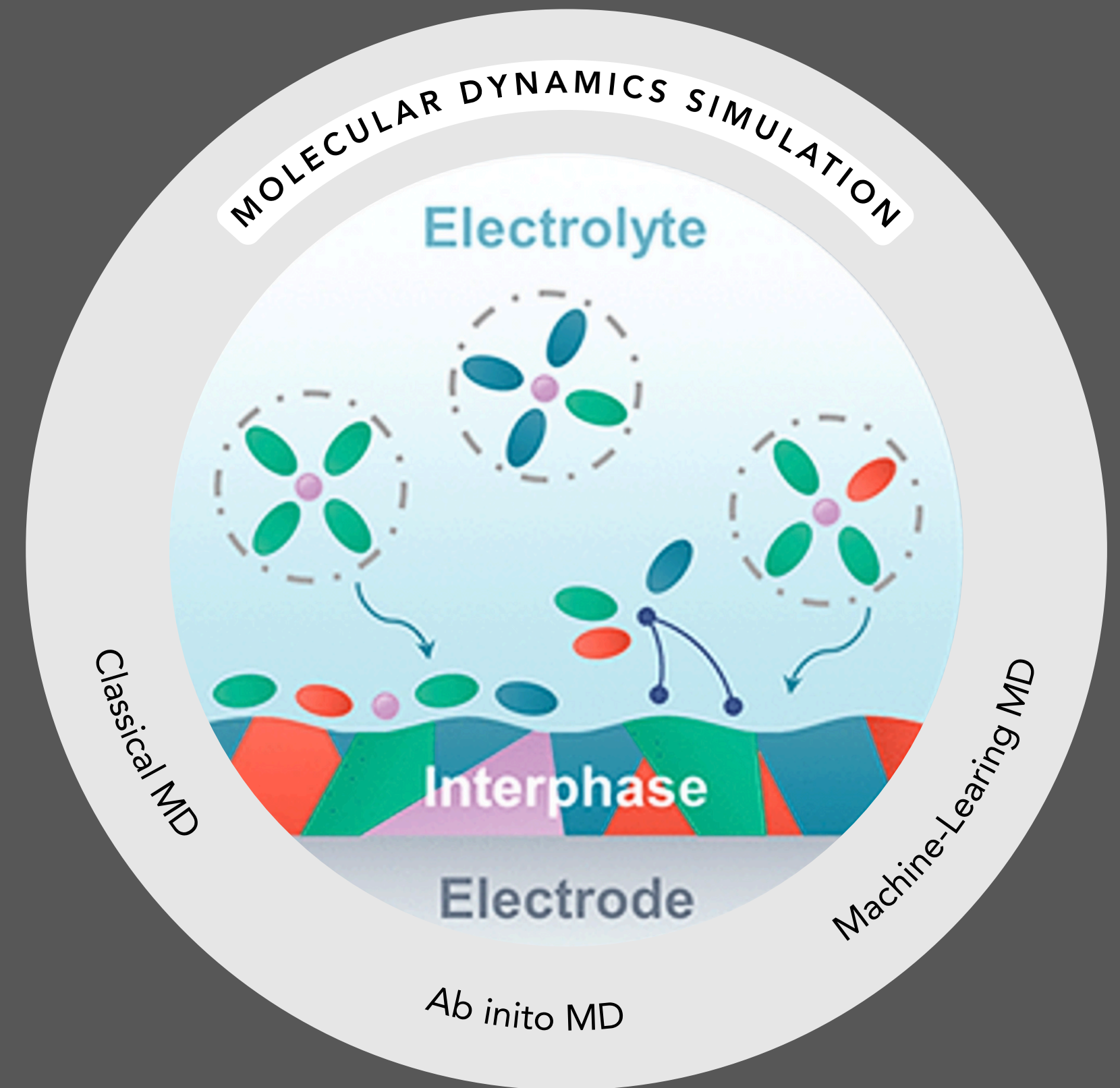
Integrating data, simulation, and machine learning to accelerate performance-aware material design.

***An IIT Alumni Council supported initiative.**



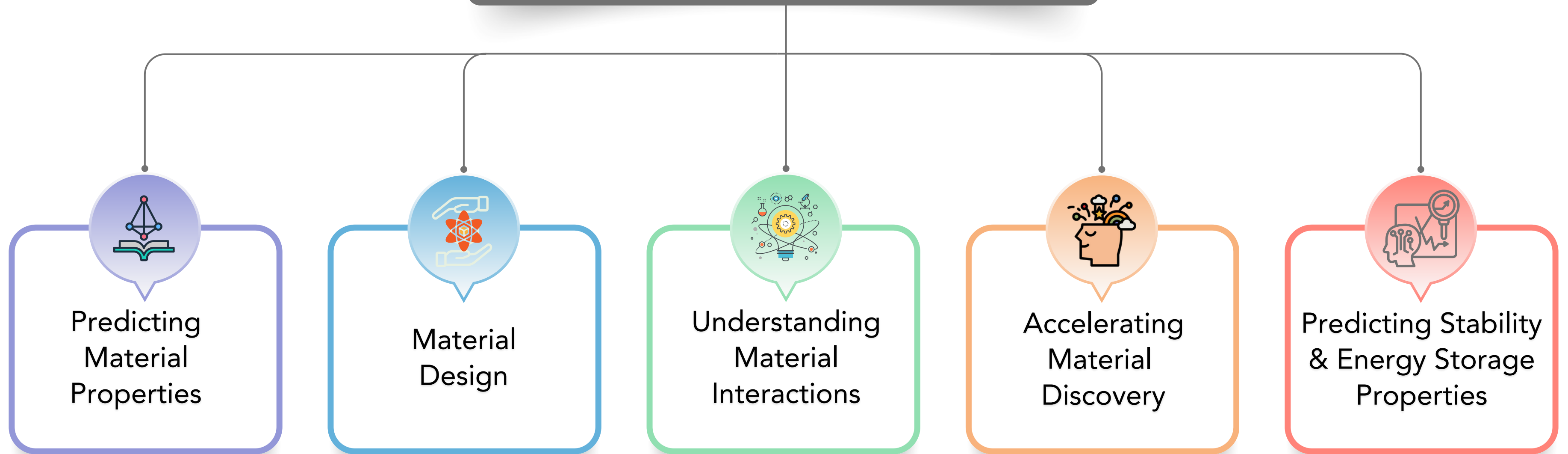
Where Chemistry Meets Computation

Simulating atomic-scale interactions across electrolyte, interphase, and electrode layers.



Ref: Farman, MdKhaja, et al. "AI-Enhanced Battery Management Systems for Electric Vehicles: Advancing Safety, Performance, and Longevity." E3S Web of Conferences. Vol. 591. EDP Sciences, 2024.

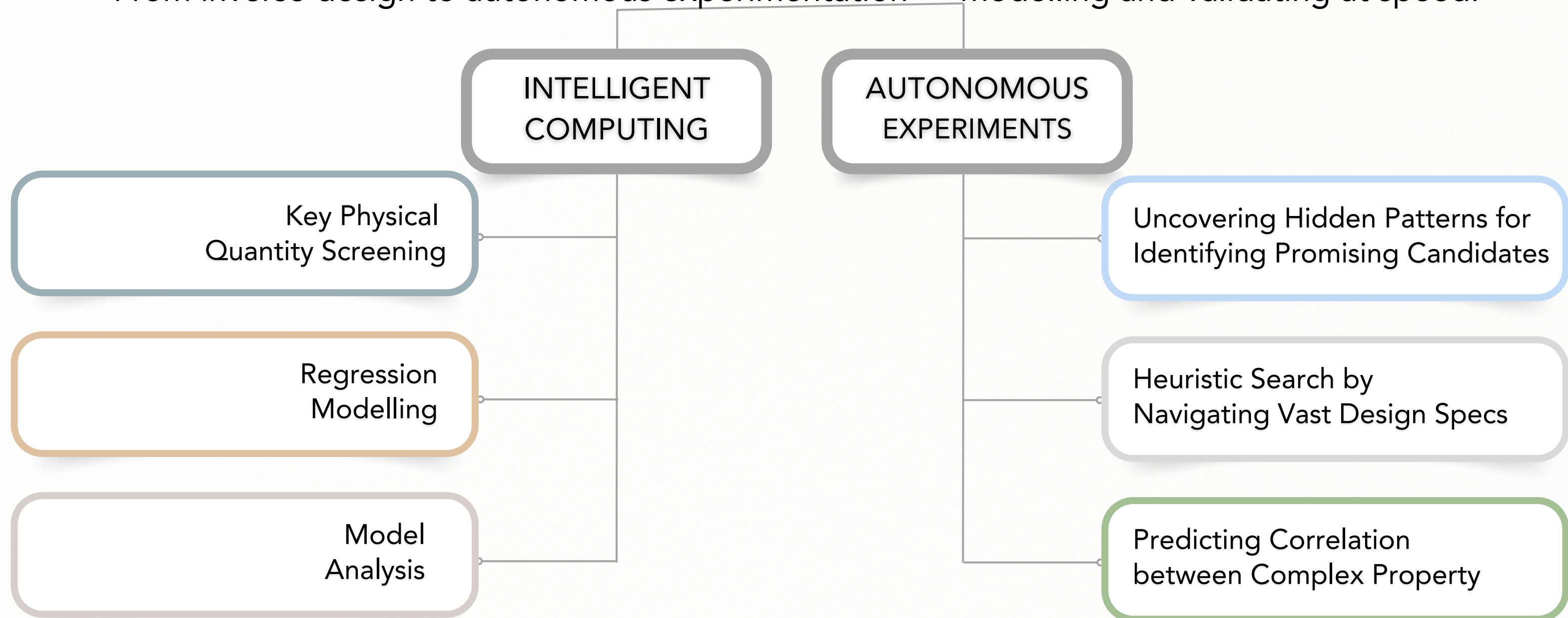
COMBINATION OF AI & DENSITY FUNCTIONAL THEORY / DFT



Creating a closed-loop system for predicting, designing, and optimising next-gen energy materials.

AI-DRIVEN MACHINE LEARNING STRATEGY FOR MATERIAL EVOLUTION

From inverse design to autonomous experimentation — modelling and validating at speed.



Comprehensive effort on electrode slurry preparation for better electrochemical performance of LiFePO₄ battery

Kumari Konda^{a,b}, Sahana B. Moodakare^{a,*}, P. Logesh Kumar^c, Manjusha Battabyal^a, Jyoti R. Seth^b, Vinay A. Juvekar^b, Raghavan Gopalan^a

^a Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials, IITM Research Park, Kanagam, Taramani, Chennai, 600113, India

^b Department of Chemical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai, 400076, India

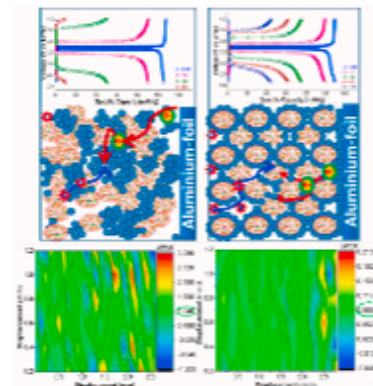
^c Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai, 600036, India



HIGHLIGHTS

- Pre-mixing of carbon black-LiFePO₄ for electrode's desired microstructure.
- A novel "linearly resolved electrical resistivity measurement" technique.
- The homogeneity of the slurry is measured using rheological properties.
- Effective transfer of LFP properties to the electrode performance.

GRAPHICAL ABSTRACT



ARTICLE INFO

Keywords:

Lithium ion battery
Slurry preparation
Dry ball-milling
Rheology
Electrochemical performance
Linearly resolved electrical resistivity measurement

ABSTRACT

For a given proportion of active material, conductive agent, and binder, performance of the lithium ion battery depends on microstructure of the electrode. Uniform distribution of de-agglomerated particles of carbon black on the active material in the slurry is crucial for establishing a conductive network around the active particles and for improving the adhesion of the electrode to the current collector. Herein, we demonstrate that pre-mixing of carbon black and LiFePO₄ via dry ball-milling achieves the desired microstructure in the electrode coating. Homogeneity of slurry of LiFePO₄ in Poly(vinylidene fluoride)/N-methyl -2-pyrrolidone is demonstrated using measurement of viscosity and dynamic light scattering. Dried electrodes are shown to be uniform via SEM imaging and by a novel "linearly resolved electrical resistivity measurement" technique. Through peel tests it is shown that adhesion of the electrode to the current collector is improved. These improvements reflect in the electrochemical characteristics of the electrode such as increased cycling stability, higher exchange current density and ability of the electrode to perform at a higher C-rate. The electrodes prepared with this method, at an optimal composition, give a higher discharge voltage of ~3 V at 10 C compared to values of 2.4–2.8 V reported for unmodified LiFePO₄ so far.

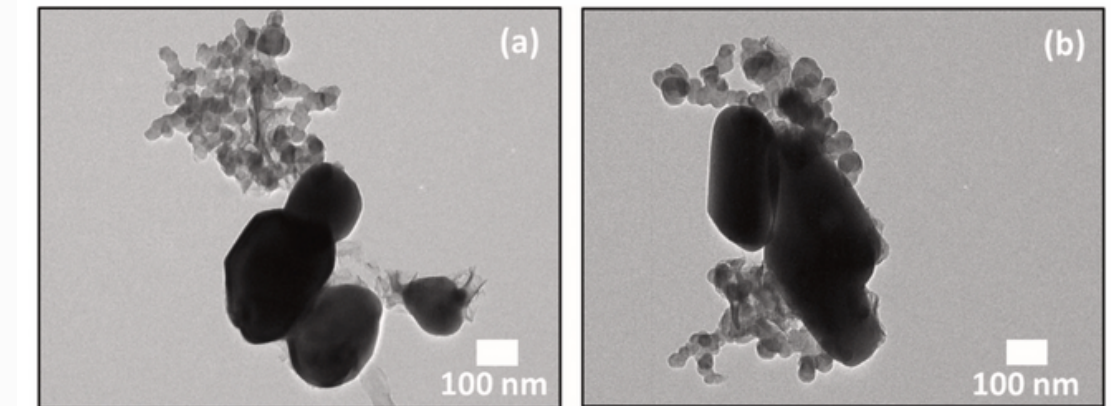
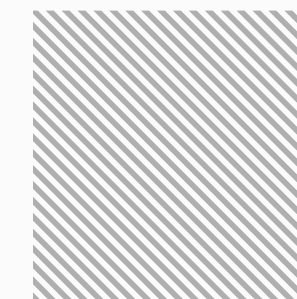


Fig. 4. TEM images of particles scraped from (a) WBM and (b) BM electrodes.



As part of the PhD project, the physical parameters of the carbon particles were altered extensively so as to achieve a 20% improvement in performance of the battery..

Reduction Self-Assembly of Three-Dimensional Graphene Hydrogels: Implication as Adsorbents

Manimegalai Ganesan* and Vinay A. Juvekar



Cite This: <https://dx.doi.org/10.1021/acsanm.0c02108>



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Supporting Information

ABSTRACT: We have prepared a three-dimensional (3D) graphene hydrogel with a specific surface area that is comparable to the theoretical specific surface area of two-dimensional graphene. Graphene oxide was reduced in a glass vial using aqueous sodium bisulfite in the presence of ammonia, which regulates the rate of reduction. The kinetics of reduction was monitored by the rate of consumption of sodium bisulfite, whereas the extent of self-assembly of the reduced graphene sheets was captured through reduction in the volume of the 3D graphene with time. Dynamics of self-assembly shows two distinct regimes, namely, induction and shrinkage. During the induction period, no noticeable shrinkage in the volume occurs, although there is a significant reduction of graphene oxide. During the shrinkage period, the volume shrinks continuously with time until it reaches a constant value. The onset of shrinkage requires a critical extent of reduction of graphene oxide. We hypothesize that during the induction period, the overlapping portions of the sheets undergo lateral stacking and the reduced graphene oxide sheets undergo enlargement. With the increase in ammonia concentration, the rate of reduction is lower, the induction period is longer, and the extent of reduction at the onset of shrinkage is greater. This causes progressively greater enlargement of sheets as observed from the scanning electron micrographs of the lyophilized 3D aerogel. On further reduction, the larger sheets shrink slowly and to a lesser extent. The extent of stacking of larger sheets is also reduced significantly as seen from X-ray diffraction.

KEYWORDS: 3D graphene, reduction-self-assembly, induction period, shrinkage period, lateral stacking

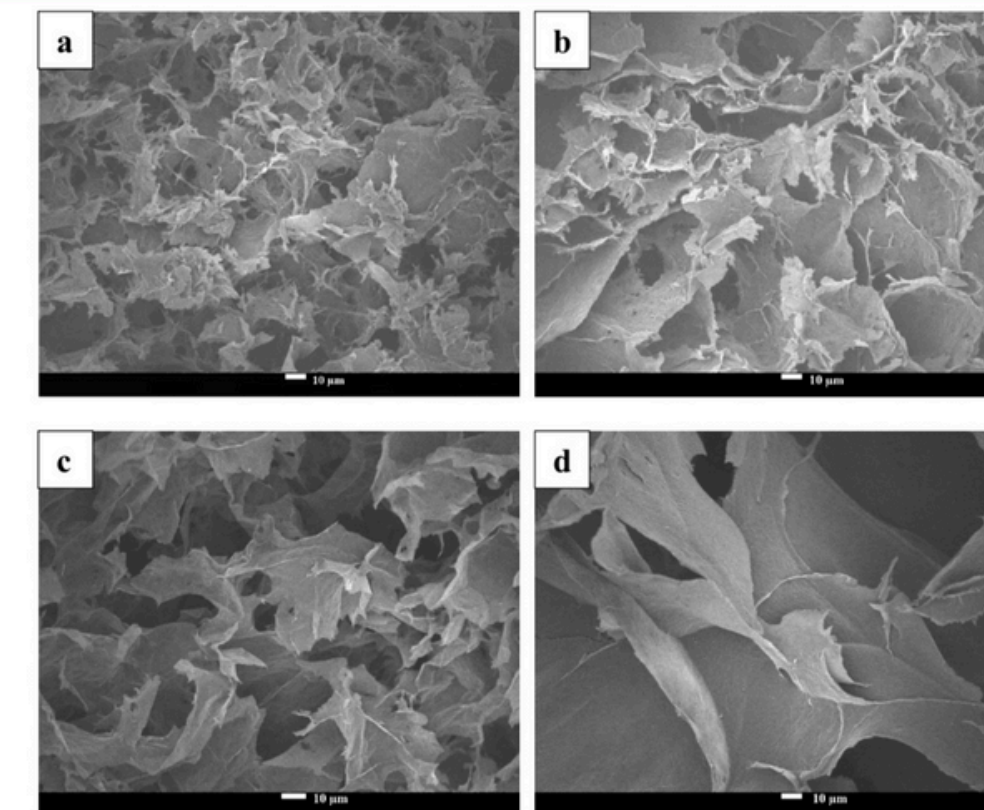
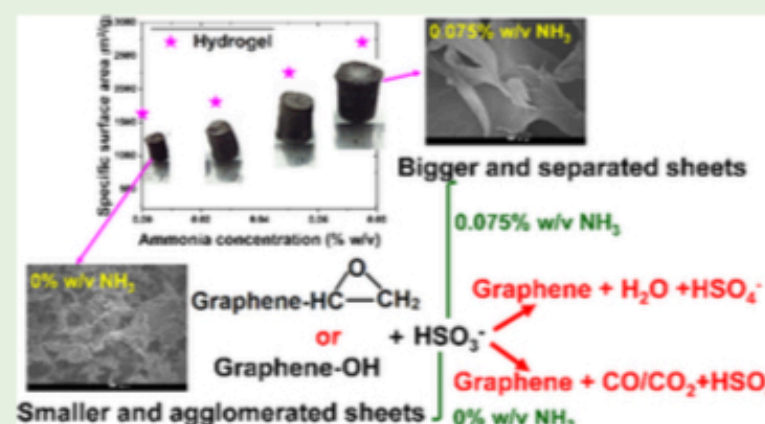


Figure 4. Field emission gun SEM (FEG-SEM) images of a three-dimensional graphene aerogel (scale bar: 10 μ m): (a) Without ammonia (500 $\times$), (b) 0.025% w/v NH₃ (500 $\times$), (c) 0.05% w/v NH₃ (600 $\times$), and (d) 0.075% w/v NH₃ (500 $\times$).



As part of the PhD project, a surface area of around 2800 sqm per gram was achieved.

Three dimensional Holey Graphene Electrodes

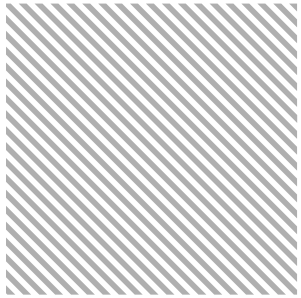
Vinay Juvekar and Per Löthman

Three dimensional (3D) graphene has properties such as high electrical conductivity, high surface area, and high electrical capacitance, which make them attractive as electrodes for electrochemical cells, capacitive deionizers and electrochemical supercapacitors. However, since graphene sheets act as ion-filters, they hinder diffusion of ions across them. This lacuna limits the thickness of 3D graphene electrodes, thereby reducing their cost effectiveness. By introducing nanometric size holes in the graphene sheets, it is possible to make the electrodes both thick and with high efficiency for ion transport. Important factors determining the efficiency is size and areal density of holes, and arrangement of holes on sheets. The optimal size and arrangement of holes provide ionic flow paths which produce uniform distribution of ions within the electrode without hindering their transport. In this talk, we discuss various aspects associated with preparation and optimization of 3D holey graphene electrodes.

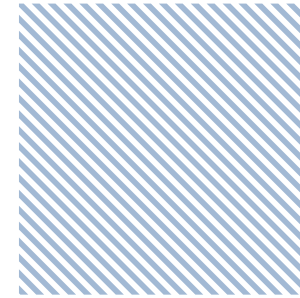
Per Arvid Löthman, PhD received their education beginning in 1990, when they completed an MSc. in Materials Science&Engineering from FAU Erlangen-Nürnberg. Per Arvid then went on to participate in a study abroad program from 1995-1996 at Alfred University, where they studied Ceramic Engineering, Glass Science, and Ceramic Science. Finally, in 2014 they completed their Ph.D. in Macroscopic Magnetic Self-assembly from the University of Twente.



Assembly of molecular scale materials by magnetic self assembly opens up completely new vistas for fabrication of AI designed materials



Material Agility: Tunable across use-cases — from mobility to grid storage — by varying electrolyte + architecture.



AI Integration: Simulates, predicts, and accelerates innovation while reducing experimental costs.



Form-Factor Flexibility: Compact, air-cooled, and stackable — engineered for Indian environments and export-ready platforms.



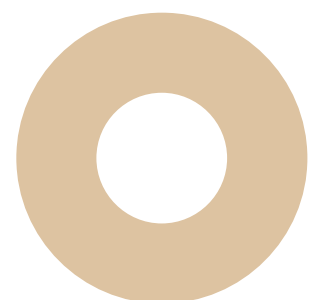
Sustainability Embedded: Designed for recycling, low-toxic profiles, and future regulatory pathways.



Ionique Research is building a manufacturing pilot line for bespoke electrolytes based on the requirements of the MegaCell.

Location

Ionique is located in 75,000 sqft pilot plant and R&D centre in Noida near Delhi.



Our Ask

IIT Alumni Council Calls for Industry Collaboration to Manufacture Advanced Sustainable Materials at Global Scale



PNN
New

IIT Alumni Council invites industry to collaborate on mass production of next-gen materials via AI-driven platforms like AMAT AI, aiming to replace scarce elements with abundant ones.

Delhi [India], June 9: The IIT Alumni Council has invited leading industrial players to collaborate on the mass production of next-generation materials, designed using principles from the semiconductor industry and accelerated by AI-driven platforms.

At the heart of this initiative lies the AMAT AI Platform--a foundational large material model under development. Its goal: to replace scarce, expensive elements like lithium, cobalt, molybdenum, nickel, and indium with earth-abundant alternatives such as coal, thorium, silica, and iron ore.

"These projects require significant capital investments--often exceeding Rs10,000 crores," said Ravi Sharma, President and Chief Volunteer, IIT Alumni

Council. "They include the design and fabrication of high-throughput process equipment and large-scale manufacturing plants. Our role is to act as a knowledge partner and incubate research startups via our Social Impact Fund. These startups are critical in adapting and refining the core technologies for industrial-scale deployment."

Reimagining Materials, Redefining Possibilities:

"Materials like carbon and silicon are extremely versatile," explained Mr. Jitendra Singh, Distinguished Fellow, IIT Alumni Council. "Carbon ranges from diamonds to coal, graphene superconductors to carbon insulators--depending on its structure. Silicon, when doped, transforms into a semiconductor. Together, carbon and silicon form silicon carbide, a key candidate for low-cost inverters and devices. We are also exploring zero-gap semiconductors, which could disrupt industries like energy storage, HVAC, and turbine manufacturing through new architectures like high-efficiency thermoelectric generators (TEGs) and Peltier-based cooling systems."

A Turning Point in Green Chemistry:

"AI's most visible early contribution to materials science is here," added Mr. Shashi Shekhar, environmentalist and former Secretary, Ministry of Water & Ganga Rejuvenation. "When combined with additive manufacturing and Industry 4.0, this opens the door to safe, sustainable, and high-performance materials. These can even replace corroding materials like ToR steel or expensive ones like food-grade stainless steel."

Shashi Shekhar, who now serves as Vice Chairman of Acme Group, noted that the Government of India's Green Hydrogen Mission is pushing for decarbonization of the steel industry.

"By aligning with the IIT Alumni Council, we plan to develop green steel alloys that are cost-effective, sustainable, and suitable for high-performance applications like additive manufacturing and specialized equipment."

Industry Progress and Global Partnerships:

Recently, Outokumpu delivered its first batch of specialty powdered stainless steel for 3D printing applications such as heat exchangers and aerospace components.

"It's remarkable that the IIT Alumni Council foresaw this trend and began building the ecosystem early--spanning AI-driven material innovation to carbon-free green steel production," said Mr. Y.P.S. Suri, former MD of Outokumpu India and IIT Kharagpur alumnus. "We are entering a new paradigm. I look forward to seeing the world's first process plant built entirely through additive manufacturing."

Gratitude to Visionary Contributors:

"The development of the AMAT AI Platform wouldn't be possible without the unwavering support of India's top corporations and visionary leaders," said Satish Mehta, Convenor of the IIT Alumni Social Fund.

He acknowledged contributions from:

Tata Group, Birla Group, Jindal Group, L & T, Reliance, Adani, ArcelorMittal, Oclor, Acme, Coal India, HPCL, among others.

He also thanked key members of the National Solar Task Force, including:

Padma Shri Prof. Ashok Jhunjhunwala, Prof. Juzer Vasi, Prof. Dinesh Kabra, and Prof. Anil Kottanthayil, for their guidance in the context of photovoltaics.

A special mention was made for the Distinguished Fellows of the IIT Alumni Council, including:

AI Chief Mentor Prof. Jyoti Joglekar and Silicon Valley collaborators Dr. Rohinton Dehmubed and Dr. Milind Kulkarni

"Their thousands of hours of effort and deep domain expertise have been instrumental. We thank each one of them."

Interested industry partners may write to applications@iitalumnicouncil.org on or before June 30, 2025

About IIT Alumni Council

IIT Alumni Council is the largest global body of alumni across all the twenty-three IITs. The Council aggregates the technological and philanthropic resources of over 50,000 alumni spread across one hundred city chapters. The IIT Alumni Council aspires to catalyse India's technological renaissance. The Council supported initiatives are funded through the IIT Alumni Social Fund. Council members are aligned with the various mission organisations (social fund, alumni outreach and longevity missions) and mission facilitators (startup incubator, project management & advisory forum and research institute)

www.iitalumnicouncil.org

About IIT Alumni Research Institute

IIT Alumni Research Institute is a mission organisation of the IIT Alumni Council. With over 500 distinguished fellows, over 250 industry partners and close to 100 academic partners - the Alumni Research Institute is establishing centres of excellence across twenty identified target industries, covering all the 64 advanced critical technologies.

www.institute.net.in

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Page URL :https://www.business-standard.com/content/press-releases-ani/iit-alumni-council-calls-for-industry-collaboration-to-manufacture-advanced-sustainable-materials-at-global-scale-125060901064_1.html



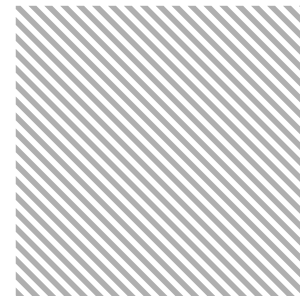
Phase 1: Prototype & Pilot Launch

Phase 2: Manufacturing + Field Testing

Phase 3: National Deployment + Licensing



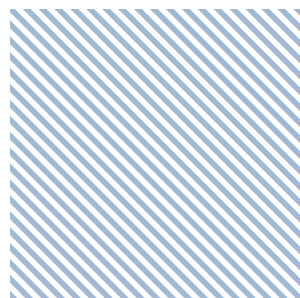
Electrode mfg process & equipment development:
36 months from start of
Noida plant (15.8.25).



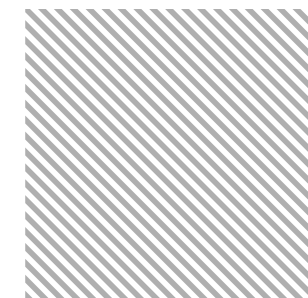
Prototype mfg plant: 60 months
from 1.1.25 with first prototype
based on commercially available
cells purchased from
competitors in June 2026.



Pilot manufacturing line for
marketing test/ trade show units:
24 months from first prototype
(30.6.25).



Grid stabilisation installation for development of software - both internal management of the Battery box and external grid interfacing for duplex grid: 12 months from close of funding round.



Funding requirements: Approx Rs 300 crores for 60 months including pilot line.



Infrastructure requirements: Approx 80,000 sqft industrial unit with around 2,000 sqm open space, a in an urban industrial setting where the grid management and stabilisation system can be tested in live conditions



Lab support: IIT and CSIR campus for various testing and certifications (IITs dont use outside labs or agencies for certifications as they are themselves the last word in the area.

Specialised testing equipment: Approx Rs 8 crores to facilitate faster testing.

We are looking for the following:

- equity investors from the venture capital / AIF domain
- industry partners to manufacture the battery on an upfront fee plus royalty basis.



Go Power

Pioneering India's Energy
Sovereignty Through Next-Gen
Energy Storage - MegaCell





Powering India and beyond — over land, water, air, and orbit.
MegaCell