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Inventing Harmonious Future

(Deemed to be University u/s 3 of UGC Act, 1956)

2026

FIVE YEARS OF RISE

Research Institute for Sustainable Energy



Growing Together for a Greener Tomorrow

TCG CREST is recognised as a Deemed to be University in the 'Distinct Category (Research)' by the Ministry of Education and the UGC, Government of India.

Welcome

to the
Research Institute for Sustainable Energy
Five-Year (2021-2026) Research Report



Content

About	Page
From the Founder's Desk	05
From the Mentor's Desk	06
From the Director's Desk	07
The rise of RISE	08
TCG CREST Leadership	09
Scientific Advisors	10
Research Pillars	12
Glimpses of Growth People behind the Research, Research Grants, Innovation and Discoveries, Faculty honours and achievements, Scholar Recognitions, Career Pathways and Research Advancements	14
Research Infrastructure and Facilities	22
Collaborations and Global Engagement	24
Knowledge Exchange and Scientific Engagement	25
Plenary, Keynote, Invited and Public Lectures	31
Academic Engagements and Research Visits	32
Faculty Spotlight	34
Publications	61
Acknowledgement	75

From the Founder's Desk



Dear Colleagues and Friends,

I am pleased to know that the Research Institute for Sustainable Energy (RISE, TCG-CREST) has successfully completed its 6 years of operations. RISE is one of the 6 verticals of TCG CREST, all of which are designed to perform the highest quality fundamental scientific research with the societal interests in mind. As such, all the verticals including RISE have multidisciplinarity at their core founding principles, and Translational Research leading to sustainable technology and product development as their functional strategy. I am very impressed by the progress made by RISE during the past 6 years on all the fronts stated above. The cohesive team of the Director, faculty, staff, PhD students, and postdocs at RISE have worked together and spared no efforts in leading to many high impact publications, International Patents, National and International Collaborations, and Societal Outreach. RISE has now become a force to reckon with in the field of energy, both nationally and internationally. I must say that the role of our exemplary Scientific Advisory Board has been crucial for this spectacular outcome and we hope to continue to engage them in the future as we take further steps towards reaching greater heights. RISE has also organized many national and international conferences as well as collaborations over these 6 years and has established itself as a leading energy research institute in the country. My congratulations to all the faculty, students, postdocs and admin people associated with RISE. I must also acknowledge the great pro-active support extended by all the past and current Directors of TCG CREST as well as the Finance and Administration teams for making all this success of RISE possible. Without their help and assistance it would not have been easy for the RISE team to reach this height in terms of the national and international standing within such a short span of a few years. Let us continue to do our best and contribute to all nation building initiatives of the Government in the spirit of Atmanirbhar Bharat.

Sincerely,
Dr. Purnendu Chatterjee
Founder & Chairman, TCG CREST

From the Mentor's Desk



Dear RISE Faculty, Colleagues and Friends,

Within the cluster of centres of excellence in translational research in the sciences at TCG CREST, RISE has established itself as an innovative future-focused nucleus in the field of Sustainable Energy. Within a short span of six years it has seen the establishment of high-end laboratories and the gathering of a remarkable faculty group. Research publications in leading international journals and a portfolio of patents and awards has ensured recognition within the global scientific community. From materials and device technologies for energy storage to clean fuels and green energy, RISE has been able to define a distinctive pathway. While faculty and research scientists are committed to success in its mission, PhD scholars at RISE are energized by the eco-system in which they find themselves. More recently, the successful ARC (Access to Research at Crest) six-week course for young students and aspiring researchers has taken the enthusiasm for sustainable energy to the next generation through academic mentorship and hands-on experience in the laboratories.

I congratulate the Director of RISE, and the entire faculty and research community of the Centre, for this remarkable achievement. Creation of knowledge, dissemination of knowledge through publications, conferences and mentorship, and reaching a point of translation of this research into products – this holistic mission is now embedded within RISE. I wish the Centre a great future ahead.

Sincerely,
Professor Malabika Sarkar
Mentor and officiating Vice-Chancellor, TCG CREST

From the Director's Desk



Dear Colleagues and Friends,

I am delighted to share with you a document highlighting the five-year progress of the Research Institute for Sustainable Energy (RISE), the "Energy & Sustainability" vertical of The Chatterjee Group's Centres of Research and Education in Science and Technology (TCG-CREST), Kolkata. It was established in 2020 as a section 8 company by Dr. Purnendu Chatterjee, fondly called as PC, the visionary leader and founder of "The Chatterjee Group (TCG)" who has been the alumni of IIT Kharagpur (B. Tech.) and UC Berkeley (Ph. D.).

As the founding director of RISE, I had the privilege and the honour of being in a position to shape the institute's focus, structure, facilities, and ambience from scratch. RISE currently holds more than seventy active researchers, and has created a state-of-the-art research infrastructure to undertake the challenging problems in the field of energy and sustainability. We strive to find affordable and sustainable solutions to mitigate the unfulfilled challenges of the field through a combination of fundamental, applied and translational research. Our particular focus has been on Energy Storage (Batteries) and Energy Harvesting (Green Hydrogen, CO_2 to clean fuels, Bioenergy).

I must add that in addition to the full support of Dr. Purnendu Chatterjee, the TCG CREST Board, the previous and current Directors of TCG CREST, RISE always received excellent and pro-active support from the Administration, Finance & Purchase, HR and Technical teams which contributed to our progress. We are grateful to all of them for their support.

I hope you will enjoy reading through this document. We would be most happy to receive your feedback and suggestions.

Sincerely,
Professor Satishchandra Ogale
Director,
Research Institute for Sustainable Energy (RISE), TCG CREST

The rise of RISE

Driven by the visionary leadership of Dr. Purnendu Chatterjee and his long-standing aspiration to build an institution anchored in academic freedom, ethical inquiry, global engagement, and societal impact, TCG CREST was established in 2020 as a pioneering interdisciplinary research ecosystem.

Conceived as a platform for transformative scientific discovery, TCG CREST was founded with four advanced research centres at its core — Research Institute for Sustainable Energy (RISE), Centre for High Impact Neuroscience and Translational Applications (CHINTA), Centre for Quantum Engineering, Research and Education (CQuERE), and Institute for Advancing Intelligence (IAI).

Among these, RISE emerged with a bold mandate: to advance cutting-edge research in energy storage and conversion, foster exceptional scientific talent, and build world-class infrastructure dedicated to shaping the future of sustainable energy.

Milestones

2020
TCG CREST established as a not-for-profit research institution, launching four advanced interdisciplinary centres: RISE, CHINTA, CQuERE, and IAI.

2022
Launch of doctoral programmes in collaboration with premier institutions including IITs, IISERs, NITs, RKMVERI, and AcSIR.

2023
Recognition by DSIR and strategic industry partnerships with KPIT and DRDO strengthened RISE's research ecosystem.

2024
Research infrastructure expanded with India's first Cryo Dual Ion Microscope and integrated co-localised AFM-Raman capabilities.

2025
Advanced sodium-ion batteries developed with 30% higher energy density than LFP and performance nearing LCO/NMC equivalence.

TCG CREST Leadership



Purnendu Chatterjee
Founder & Chairman



Jeremy Ranjan Ghose
President, The Chatterjee Group and Board of Directors



Prof. Malabika Sarkar
Mentor and officiating Vice-Chancellor



Dr. Anirban Chakraborty
Vice President Research and Development & Registrar



Anubrata Chakrabarti
Vice President External Engagements



Suprakash Das
Chief Financial and Operating Officer



Ayananshu Banerjee
Head – IT & Digital

Scientific Advisors



Ramamoorthy Ramesh
Honorary Chairman, RISE
Professor; Purnendu Chatterjee Chair in Energy Technologies, University of Berkeley



Dipankar Das Sarma
Honorary Member, RISE
ANRF National Science Chair and Honorary Professor, Indian Institute of Science (IISc)



Gerbrand Ceder
Honorary Member, RISE
Samsung Distinguished Professor of Engineering at University of California, Berkeley; Co-Founder, Radical AI



Jean-Marie Tarascon
Honorary Member, RISE
Chair of Solid State Chemistry and Energy, Collège de France; Recipient of the 2022 CNRS Gold Medal



X-ray Photoelectron Spectrometer at RISE Lab