Centre for Renewable Energy under Centre of excellence in Frontier Areas of Science and Technology (FAST) at Indian School of Mines, Dhanbad

The goal of the Centre of excellence (CoE) in **Centre for Renewable Energy (CRE):**

- ✓ To develop the solar panels based on micro or nano science and nanotechnology.
- ✓ To develop inexpensive systems using abundant and environmentally friendly materials.
- ✓ To develop an efficient lab scale solar panel system using micro/nanoscale solar photovoltaic technology.

The center has overseen the research and development of the most progressive renewable energy technologies. CRE continues to instigate, lead and deliver high quality, research & academic, collaborating with industry, National and international activities.

Activities of CoE:

- ✓ To encourage green building practices and energy auditing to make rural and urban areas a green zone within the next 10-15 years.
- ✓ To develop fully solar energy driven systems for irrigation and to develop a long term strategy to move towards innovation in other application areas driven by solar energy *e.g.* green lighting, green computing etc.
- ✓ To trend highly qualified and innovative personnel by specialized training and knowledge sharing for enhancing their contribution to the development of research in the areas of solar energy.

Major objectives of this centre

- ✓ Micro crystalline SiGe/Si and SiSn based thin film solar cell.
- ✓ Surface Plasmon to enhance the efficiency of solar cell.
- ✓ Nanostructured band gap engineered solar cell to reduce the sub band gap energy loss.
- ✓ Fabrication of Organic/inorganic based high efficiency Perovskite solar cells
- ✓ Fabrication of multijunction solar cells
- ✓ To plan the industry oriented research and collaborative activities in the field of solar energy with the aim of transferring the research/innovation output into the industry.

Faculty members assoicated with centre

Sl. No.	Nmae & Designation	Department	Research area
1	**Dr. Mukul Kr. Das** Associate Professor	Electronics Engineering	Microcrystalline Si/SiGe based Thin Film Solar Cell, Nanophotonic Devices
2	**Dr. R. Thangavel** Assistant Professor	Applied Physics	Fabrication of Nanostructured Thin Film Solar Cell, Organic/ Inorganic perovskite solar cells, Dye-sensitized solar cell & Quantum Dots Sensitized Solar cell
3	**Dr. B. Chowdhury** Associate Professor	Applied Chemistry	Preparation and characterization of oxide nanomaterial, Gold nanoparticle for oxidation
4	**Dr. Jitendra Kumar** Associate Professor	Electronics Engineering	Nanophotonic Devices
5	**Dr. Tanmoy Maity** Associate Professor	Mining Machinery Engineering	Wind Energy, Power Electronic Converters

Could make social impact.

- ✓ To encourage green building practices and energy auditing to make ISM and nearby villages a green areas within the next ten years.
- ✓ To develop fully solar energy driven pumping system for irrigation in a village nearby ISM, Dhanbad. To develop a long term strategy to move towards innovation in other application areas driven by solar energy *e.g.* green lighting, green computing etc.
- ✓ To trend highly qualified and innovative personnel by specialized training and knowledge sharing for enhancing their contribution to the development of research in the areas of solar energy which can be used as an alternative energy source with no pollution to the environment.