Carbon Quantum Dots

A team of scientists in **Council of Scientific & Industrial Research-North East Institute of Science and Technology (CSIR-NEIST), Assam** has developed a chemical process that turns 'dirty' coal into a biomedical 'dot' to help detect cancer cells.

> They have applied for a patent for their chemical method of producing Carbon Quantum Dots (CQDs) from **cheap, abundant, low-quality and high-sulphur coals.**

Carbon Quantum Dots (CQD)

- CQDs are **carbon-based nanomaterials** whose size is less than 10 nm, or nanometre.
- Carbon-based nanomaterials are used as diagnostic tools for **bio-imaging**, especially in **detecting cancer cells,** for **chemical sensing** and in **optoelectronics**. The CQDs that the CSIR-NEIST team developed emit a bluish colour with high-stability.
- **Cost advantage:** The CSIR-NEIST technology can produce approximately 1 litre of CQDs per day at a low cost to become an import substitute.
    - The developed CQDs are cheaper than imported CQD.
    - CQDs are futuristic materials whose demand in India has been increasing leading to a considerable volume of import.
- **Environment-friendly:** The process is environment-friendly and consumes lesser water than methods elsewhere. The process can also be recycled with a manageable supply chain.
- **Source material:** Abundant, low-quality Indian coal not directly suitable for thermal electricity production.