Jamshedpur NML Develops 22-Carat Spherical Gold Powder for 3-D Printing

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CSIR-NML Jamshedpur makes history by developing India's first 22-carat spherical gold powder, specifically designed for 3D printing in jewelry and tech industries

Jamshedpur: In a major leap for indigenous technology, the CSIR-National Metallurgical Laboratory (NML) in Jamshedpur has successfully developed 22-carat spherical gold powder for the first time in India. This specialized powder will revolutionize additive manufacturing (3D printing) in the jewellery and high-tech sectors.

A Breakthrough in Additive Manufacturing

Dr. K. Gopala, a senior scientist at CSIR-NML, shared this achievement during a seminar organized by the Institution of Engineers (India), Jamshedpur Local Center, at the SNTI Auditorium in Bistupur. He explained that the success of 3D printing depends entirely on the quality of the raw material—the metal powder.

Using NML's advanced **"Special Gas Atomizer Facility,"** researchers synthesized the gold powder to meet global standards. This development provides a new direction for creating intricate jewelry designs and complex technical components that were previously impossible to manufacture using traditional methods.

Key Highlights from the Seminar

The seminar, titled *"Advanced Product Development and Characterization from Raw Material Synthesis,"* brought together industry leaders and researchers to discuss India's path toward self-reliance (Atmanirbhar Bharat).

- **Bridging Lab to Factory:** Chief Guest **Manos De** (Office Head, Tata Consulting Engineers) emphasized that laboratory research is only meaningful when it reaches the factory floor. He urged young engineers to adopt new technologies that save cost and energy.
- **The Necessity of 3D Printing: Vineet Kumar Sah** (Chief of Long Products, Tata Steel, and Chairman of IEI) noted that the demand for precision finishing and complex structures makes additive manufacturing indispensable in the modern era.
- **Advancements in Steel and Ceramics:**
  - **Dr. Monalisa Mandal (NIT Jamshedpur)** presented research on SS 420 Martensitic steel, showing how controlled DMLS techniques improve product strength.
  - **Kaushal Kishore (Tata Steel R&D)** discussed "Wire Arc Additive Manufacturing" and its role in increasing the corrosion resistance of 316L stainless steel.
  - **Dr. Ram Krishna (NIT Jamshedpur)** spoke on high-temperature ceramic products and their future industrial applications.

Moving Toward Self-Reliance

Experts at the event concluded that connecting such laboratory innovations directly to the industry is vital for India’s growth. The event, coordinated by Krishnendu Shaw and conducted by Sukanya Das (JUSCO), provided a platform for engineers and policymakers to collaborate on future technologies.