

Seminar

Institute for Plasma Research

Title: Global Fusion Scenario & ITER Private Sector Fusion Engagement
Speaker: Shri. Nitendra Singh
ITER Organization, France
Date: 15th July 2025 (Tuesday)
Time: 09:30 AM
Venue: Seminar Hall, IPR

Abstract

The global fusion energy landscape is undergoing a transformative shift, driven by synergistic advances in public sector research, international cooperation, and a rapidly expanding private fusion industry. At the core of this development is the **ITER Organization**, a landmark megaproject involving 33 nations, which aims to demonstrate the scientific and engineering feasibility of sustained nuclear fusion via magnetic confinement using the tokamak approach. ITER serves as a central testbed for integrated plasma physics, superconducting magnet systems, tritium breeding strategies, and power handling technologies—laying the groundwork for future demonstration plants. India, being one of the members of ITER organization, is advancing ahead with emerging private fusion companies and leading supply chain.

Concurrently, the emergence of over 40 private fusion ventures—including leading firms like TAE Technologies, Commonwealth Fusion Systems, and Helion Energy—signals a paradigm shift. These companies are leveraging compact designs, novel confinement approaches (e.g., field-reversed configurations, magneto-inertial fusion), and advanced materials.

This talk will underscore the critical function of the **ITER Private Sector Fusion Engagement** initiative in driving fusion forward as a cornerstone of the global clean energy transition and discusses the pathways for collaborative effort for faster fusion commercialization.
