



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Perunthalsivam Kamarajar"

Biomaterials: The New Frontier

Published On: 07-01-2026

Background & Context

As the world seeks to de-fossilize the economy, **Biomaterials** (materials derived from biological sources like fungi, agricultural waste, or bacteria) are emerging as the sustainable alternative to petroleum-based plastics.

Key Concepts

- **Materials Engineering:** Using synthetic biology to "grow" textiles (e.g., mushroom leather) or medical implants that the human body won't reject.
- **Circular Economy:** Biomaterials are often biodegradable or compostable, reducing the "plastic footprint."
- **India's Potential:** With massive agricultural biomass, India can become a global hub for **bio-manufacturing**, aligning with the **BioE3 Policy** (Economy, Environment, and Employment).

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