

PEN8J002 ENVIRONMENTAL NANOTECHNOLOGY

Module I

Nanotechnology and the environment, nanotechnology and our energy challenge; nanomaterials fabrication.

Module II

Methods for structural and chemical characterization of nanomaterials; instrumentation for nanotechnology, reactive oxygen species generation on nanoparticulate material.

Module III

Principles and procedures to assess nanomaterial toxicity; toxicological impacts of nanomaterials; nanoparticle transport, aggregation, and deposition.

Module IV

Nanomaterials for groundwater remediation; membrane processes; nanomaterials as adsorbents; assessing lifecycle risks of nanomaterials, longevity of nanoparticles.

Books & References:

1. Nanotechnology: Fundamentals and Applications by Manasi Karkare, I. K. International Pvt Ltd.
2. Nanotechnology and the environment: applications and implications by Barbara Karn. American Chemical Society.
3. Nanotechnology and the Environment by Kathleen Sellers, Christopher Mackay, Lynn L. Bergeson, Stephen R. Clough, Marilyn Hoyt, Julie Chen, Kim Henry, Jane Hamblen Press.
4. Environmental and Human Health Impacts of Nanotechnology by Jamie R. Lead, Emma Smith John Wiley & Sons.
5. Environmental Nanotechnology: Applications and Impacts of Nanomaterials- Mark Wiesner, Jean-Yves Bottero, McGraw Hill.