INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

POPULAR LECTURE SERIES (2016 – 17)

Speaker: Dr. Ambesh Dixit,

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Title: Concentrated Solar Power Technology: An Indian Perspective

Time: Saturday, 17 December, 2016

Venue: Seminar Hall, Second floor, IITRAM

Abstract

Dr. Ambesh Dixit has served as a Scientist 2003-2006, Solid State Physics Lab New Delhi. He has received his M.S. (2008) Ph.D. (2010) degrees from Wayne State University, Michigan, USA. His Research Interests include Material Science- computational and experimental Oxide and nitride compound semiconductor for spintronic, photovoltaic and sensor applications, Materials by design using abinitio DFT, Mangetic nanoparticles for biological applications, Energy storage- electrical and thermal storage materials. Dr. Dixit is presently involved in a Ministry of New and Renewable Energy funded project on Concentrated Solar Power.

Energy crisis has compelled researchers to innovate the alternatives against the conventional resources to at least mitigate the everyday increasing energy demand. The solar photovoltaic technology is already in use either in the form of MW power plants or in terms of distributed energy applications for satisfying the small scale energy needs. However, the electrical efficiency of such photovoltaic power plants is limited by ~ 17% because of materials' and technological limitations. An alternative, the concentrated solar power (CSP) is getting attention and recently MW capacity solar thermal power plants are being developed for generating electricity with reasonably comparable electrical efficiency. Moreover, the concentrated solar thermal technologies can be adopted for numerous applications, where directly thermal energy is required. The efficiency of such CSP systems can be achieved upto ~ 50 – 60%. Thus, CSP technologies may be very useful for industrial applications e.g. water desalination, metal processing, milk pasteurizing, pharmaceutical and paper industries etc. The presentation included the basics of concentrated solar thermal power technologies such as parabolic trough, liner Fresnel, towers and parabolic dishes and associated technological challenges & advancements in Indian perspectives.