

## INVESTIGATION OF BIOGENIC AG NANOPARTICLES USING MEDICINAL PLANT EXTRACT AND THEIR ANTIMICROBIAL STUDY

**Anita Sadadevan Ethiraj**

VIT-AP University, India

Silver (Ag) nanoparticles exhibit significant role in the field of nanotechnology and nanomedicine owing to its physiochemical properties like antibacterial and antifungal activities, chemical stability, catalytic activity and good conductivity. These inorganic nanoparticles being safe and nontoxic can destroy disease-causing microorganisms. The potential applications of Ag nanoparticles include optical receptors for biolabelling, wound dressing, biosensors, medical devices, antimicrobial nanopaints, solar energy absorption as selective coatings, water purification and in electrical batteries as intercalation material. Amongst various existing physical and chemical methods, the biological methods are rapid, low-cost, ecofriendly hence mostly preferred for the synthesis of Ag-NPs. These methods utilize use of microorganisms, fungi, enzymes and plant extracts as reducing and stabilizing agents. The major advantage of using plant extracts is the elimination of cell culture. In literature many reports are available on the green synthesis of Ag-NPs from numerous plant extracts which includes widely used medicinal plants such as aloe vera, tulsi (*Ocimum tenuiflorum*), nilgiri (*Eucalyptus chapmaniana*), amla (*Emblicaofficinallis*), ashwagandha (*Withaniasomnifera*), hibiscus (*Rosa sinensis*), neem (*Azadirachta indica*) etc. The present talk will focus on some of the interesting work carried out by our research group on *Carica papaya* and *Alstonia scholaris* plants with good medicinal values where the leaf extracts itself acts as a reducing and stabilizing agent for the formation of Ag nanoparticles using green chemistry approach. The optical, structural and morphological characteristics of silver nanoparticles synthesized using various characterization tools like x-ray diffraction (XRD), atomic force microscopy (AFM), UV-Vis absorption spectroscopy, scanning electron microscopy (SEM) coupled with x-ray energy dispersive spectroscopy (EDS) and atomic force microscopy (AFM) will be presented. Later the impact of leaf condition on the formation of nanoparticles as well as the evaluated efficacy of the antimicrobial activity of biogenic Ag NPs from *A scholaris* will be discussed.

## BIOGRAPHY

Anita Sagadevan Ethiraj has completed her PhD from Department of Physics, University of Pune, India in 2006. She was a visiting Scientist and BK21 postdoctoral Researcher for the year 2006-2008 in POSTECH and SKKU, South Korea. She also worked on US defense sponsored project from 2010-2013 at North Carolina, USA. She is presently working as an Associate Professor in the Physics Department, VIT-AP University, India. Her research area of interest includes core-shell nanoparticles, quantum dots in diodes and LED's, thin film technology, photovoltaics, green chemistry, graphene/metal oxide-based nanocomposites for environmental and energy applications. She has delivered several invited talks in national and international conferences, served as Convenor, National Advisor Committee Member, Technical Committee Member and session chairs, holds membership in many professional organizations, reviewer for Elsevier and Springer publisher journals and has numerous peer reviewed impact factor papers to her credit.

[ethirajanita25@gmail.com](mailto:ethirajanita25@gmail.com)

