

May 29-30, 2019  
Singapore

Shilpa A Pande, Polym Sci 2019, Volume 5

## Green synthesis of silver nanocomposite through chemical route for gas sensing

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**A** very simple, low cost eco-friendly method is presented for the synthesis of silver nanoparticles to be used in colorimetric optical sensors based on localized SPR (LSPR) measurement for gas ammonia. Silver nitrate salts are reduced using gaur gum which acts as a capping and reducing agent. Commonly used reducing agents such as Trisodium citrate or sodium borohydride are replaced by a more environmental friendly natural polysaccharide. Nanocomposite films of ~ 1.5  $\mu\text{m}$  thicknesses were fabricated using Gaur Gum and silver nanoparticles. The uniformity of nanoparticles size was measured by SEM and TEM, while face centred cubic structure of crystalline silver nanoparticles was characterized using the X-ray diffraction technique. The optical properties of the composite film were tested by UV-VIS Spectroscopy. The formation of Gaur Gum/silver nanocomposite films was confirmed using SEM

images. Also, the resistivity of nanocomposite thin film was measured which could be then used for gas sensing application. The sensitivity towards ammonia gas of polyaniline-silver nanocomposite (average size of nanoparticle ~ 170 nm) has been investigated. The sensitivity of the composite for 100 ppm ammonia has improved to 52% from a mere 7% value for pure polyaniline.

### Biography

Dr. Shilpa A Pande has completed her PhD in Physics by Vivesvaraya National Institute of Technology(VNIT), Nagpur. She is working as Professor at Laxminarayan Institute of Technology, RTMNU, Nagpur. She has published more than 25 papers in reputed journals and has been serving as an Head of Applied Physics Department.

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