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Tunable localized surface plasmon resonance in transition metal oxide nanostructures

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Noble metals in plasmonics have been investigated because of its applications in biosensing, optoelectronic and photonic devices. The high electron density of metals, which allows the plasmon resonance to fall in the visible range and the stable metallic properties allowed metals to be the best candidates for plasmonic applications in spite of the high cost. Recent progress in transition metal oxides (TMO's) research exhibits plasmonic behavior in visible and NIR region which is more interesting than noble metals because of cost and stability. In this paper, we have demonstrated tunable LSPR of hydrogen treated molybdenum trioxide and compared thin films with nanostructured MoO₃. The electrical and optical properties are characterized and discussed the physics of tunable plasmon in TMO's.

Biography

Sujan Kasani is currently a PhD student of Electrical Engineering department in West Virginia University, USA. His research area cover nanofabrication, semiconductor electronics, biosensors and solar energy. He published (first and co-authored) 8 papers in high impact factor journals which include Nano Research, JPCC, Analytical Chemistry and Nanoscale Horizons. He is also serving as a reviewer for Elsevier-Photonics and Nanostructures, IOP-Nanotechnology and ISME.

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