In this issue

Tamoghna Purkayastha,
Tanay Chattopadhyay and
Debashis De

Design of reversible logic circuits using quantum dot cellular automata-based system

DOI 10.1515/ntrev-2015-0033
Nanotechnol Rev 2015; 4(5): 375–392

Review: Transistor less nanoreversible logic circuits using quantum dot cellular automata are discussed in this article.

Keywords: nanotechnology; quantum dot cellular automata; reversible logic circuit.

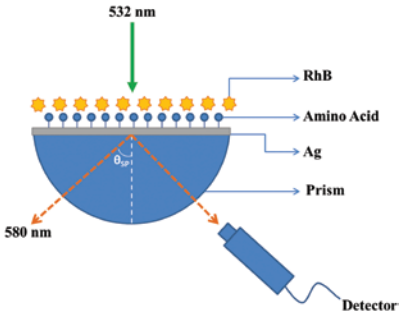
Pradyumna Mulpur, Aditya Kurdekar,
Ramakrishna Podila, Apparao M. Rao
and Venkataramaniah Kamisetti

Surface plasmon coupled emission as a novel analytical platform for the sensitive detection of cysteine

DOI 10.1515/ntrev-2015-0003
Nanotechnol Rev 2015; 4(5): 393–400

Research highlight: We demonstrate the implementation of surface plasmon coupled emission (SPCE) as a novel, simplistic, and economical sensing platform for the sensitive and specific detection of the thiolated amino acid cysteine, exploiting the unique thiol-silver interactions.

Keywords: cysteine; sensing; surface plasmon coupled emission (SPCE); thiolated amino acids.



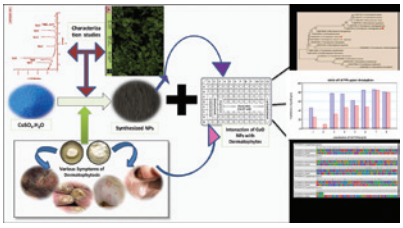
Rajesh Kumar, Shashi Kant Shukla,
Anand Pandey, Sanjeev Kumar
Srivastava and Anupam Dikshit

Copper oxide nanoparticles: an antidermatophytic agent for *Trichophyton* spp.

DOI 10.1515/ntrev-2015-0010
Nanotechnol Rev 2015; 4(5): 401–409

Research highlight: In the present investigation, we synthesized copper oxide nanoparticles via the precipitation method, characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD) and evaluated their antidermatophytic properties by the broth microdilution method recommended by Clinical and Laboratory Standards Institute (CLSI).

Keywords: antimicrobial agent; broth microdilution method; SEM; *Trichophyton*; XRD.



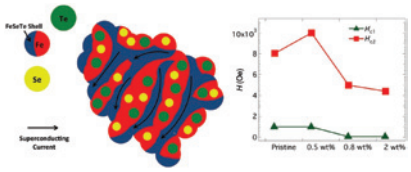
Pooja Puneet, Ramakrishna Podila, Jian He, Apparao M. Rao, Austin Howard, Nicholas Cornell and Anvar A. Zakhidov

Synthesis and superconductivity in spark plasma sintered pristine and graphene-doped $FeSe_{0.5}Te_{0.5}$

DOI 10.1515/ntrev-2015-0018
Nanotechnol Rev 2015; 4(5): 411–417

Research highlight: A new ball-milling and spark plasma sintering based technique for the facile synthesis of $FeSe_{0.5}Te_{0.5}$ superconductors without the need for pre-alloying is presented.

Keywords: graphene; spark plasma sintering; superconductivity.



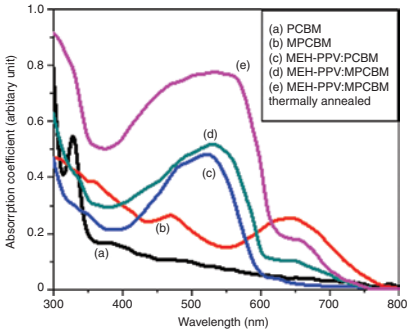
Shyam S. Sharma, Khushboo Sharma and G.D. Sharma

Efficient bulk heterojunction photovoltaic devices based on modified PCBM

DOI 10.1515/ntrev-2014-0041
Nanotechnol Rev 2015; 4(5): 419–428

Research highlight: Bulk heterojunction organic photovoltaic solar cells based on MEH-PPV and modified [6,6]-phenyl-C61-butyric acid methyl ester (MPCBM) show power conversion efficiency (PCE) up to 1.78%, where PCE has been further improved up to 1.95% after thermal annealing of the active layer.

Keywords: active layer; annealing; MEH-PPV; modified PCBM; organic bulk heterojunction.



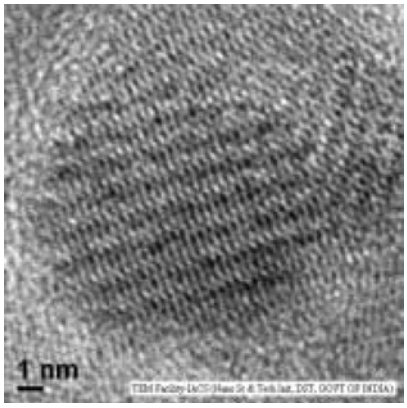
Ashis Dey

Electrical transport in titania nanoparticles embedded in conducting polymer matrix

DOI 10.1515/ntrev-2015-0015
Nanotechnol Rev 2015; 4(5): 429–437

Research highlight: The article focuses on the synthesis of conducting polypyrrole (PPY)-TiO_2 nanocomposite, electrical transport and dielectric properties.

Keywords: colossal dielectric constant; nanocomposites; nanoparticles; polypyrrole.



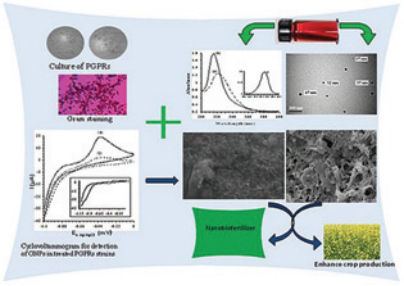
Shashi Kant Shukla, Rajesh Kumar, Rohit Kumar Mishra, Anand Pandey, Ashutosh Pathak, MGH Zaidi, Sanjeev Kr. Srivastava and Anupam Dikshit

Prediction and validation of gold nanoparticles (GNPs) on plant growth promoting rhizobacteria (PGPR): a step toward development of nano-biofertilizers

DOI 10.1515/ntrev-2015-0036
Nanotechnol Rev 2015; 4(5): 439–448

Research highlight: The study reflects the effect of gold nanoparticles at various concentrations on plant growth promoting rhizobacteria.

Keywords: CLSI; GNPs; nano-biofertilizers; PGPR; TEM.



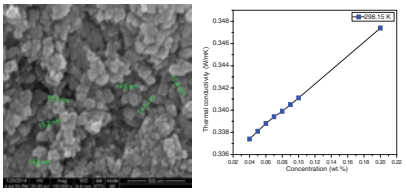
Mohan Leena, Shanmugam Srinivasan and Marimuthu Prabhaharan

Evaluation of acoustical parameters and thermal conductivity of TiO_2-ethylene glycol nanofluid using ultrasonic velocity measurements

DOI 10.1515/ntrev-2015-0016
Nanotechnol Rev 2015; 4(5): 449–456

Research highlight: Stable TiO_2-EG nanofluids of various concentrations were synthesized and their ultrasonic and thermal properties studied at room temperature.

Keywords: ethylene glycol (EG); nanofluids; thermal conductivity; TiO_2; ultrasonic velocity.



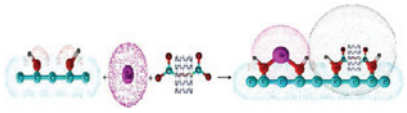
Rithin Kumar N.B., Vincent Crasta, B.M. Praveen and Mohan Kumar

Studies on structural, optical and mechanical properties of MWCNTs and ZnO nanoparticles doped PVA nanocomposites

DOI 10.1515/ntrev-2015-0020
Nanotechnol Rev 2015; 4(5): 457–467

Research highlight: This study aims to examine the effect of nanoparticle double-doping on the structural, optical and mechanical properties of PVA synthesized by using the solvent casting method.

Keywords: dopant; nanocomposites; PVA.



Apparao M. Rao

Energy and our future: a perspective from the Clemson Nanomaterials Center

DOI 10.1515/ntrev-2015-0046
Nanotechnol Rev 2015; 4(5): 479–484

Nanotechnology institutions: In order to enhance the viability of energy-storing devices, the Clemson Nanomaterials Center has developed a mix of scalable processes for carbon nanotube-based hybrid electrodes that show promise as a cost-effective alternative to standard activated carbon-based electrodes.

Keywords: carbon nanotubes; Clemson Nanomaterials Center; energy storage; supercapacitors.