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Research Interests

Syntheses and properties of inorganic nanostructures and their applications to solar-energy and microelectronic devices:

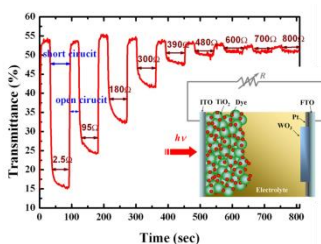
1. Dye-sensitized solar cells
2. Hybrid Polymer solar cells
3. Electrochromic devices
4. Photovoltachromic cells
5. Photoelectrochemical water splitting cells
6. Resistive switching memories

Representative Publications

1. J.-J. Wu*, M.-D. Hsieh, W.-P. Liao, W.-T. Wu, J.-S. Chen, *Fast-Switching Photovoltachromic Cells with Tunable Transmittance*, ACS Nano, 3, 2297, 2009.
2. J.-J. Wu*, Y.-R. Chen, W.-P. Liao, C.-T. Wu, C.-Y. Chen, *Construction of Nanocrystalline Film on Nanowire Array via Swelling Electrospun Polyvinylpyrrolidone-Hosted Nanofibers for Use in Dye-Sensitized Solar Cells*, ACS Nano, 4, 5679, 2010.

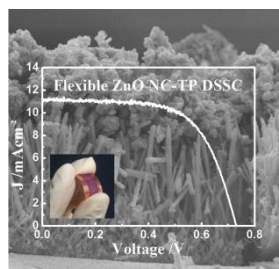
3. Chun-Te Wu and Jih-Jen Wu*, *Room-Temperature Synthesis of Hierarchical Nanostructures on ZnO Nanowire Anodes for Dye-Sensitized Solar Cells*, J. Mater. Chem., 21, 13605, 2011.
4. Y.-H. Sung, W.-P. Liao, D.-W. Chen, C.-T. Wu, G.-J. Chang, J.-J. Wu*, *Room-Temperature Tailoring of Vertical ZnO Nanoarchitecture Morphology for Efficient Hybrid Polymer Solar Cells*, Adv. Funct. Mater. 22, 3808, 2012.
5. W.-P. Liao, J.-J. Wu*, *Efficient Electron Collection in Hybrid Polymer Solar Cells: In-Situ-Generated ZnO/Poly(3-hexylthiophene) Scaffolded by a TiO₂ Nanorod Array*, J. Phys. Chem. Lett. 4, 1983, 2013.
6. J.-S. Yang, W.-P. Liao, J.-J. Wu*, *Morphology and Interfacial Energetics Controls for Hierarchical Anatase/Rutile TiO₂ Nanostructured Array for Efficient Photoelectrochemical Water Splitting*, ACS Appl. Mater. Interfaces, 5, 7425, 2013.

Photovoltachromic Cells

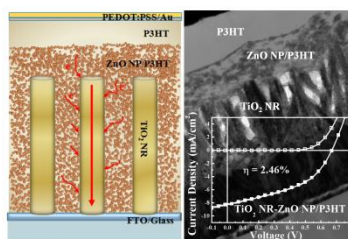


ACS Nano, 2009; US Patent, 2012

Dye-Sensitized Solar Cells

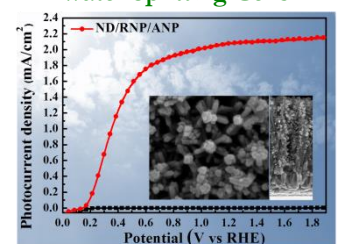


Hybrid Polymer Solar Cells



J. Phys. Chem. Lett., 2013

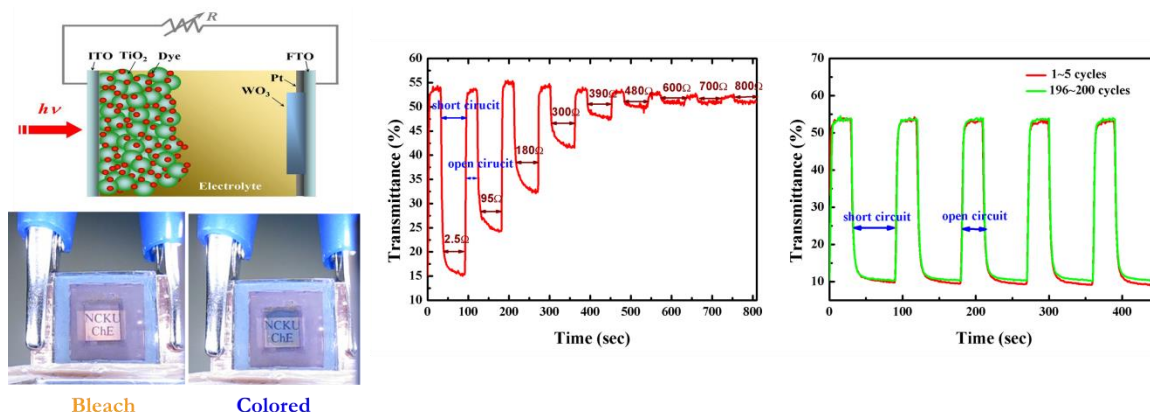
Photoelectrochemical Water Splitting Cells



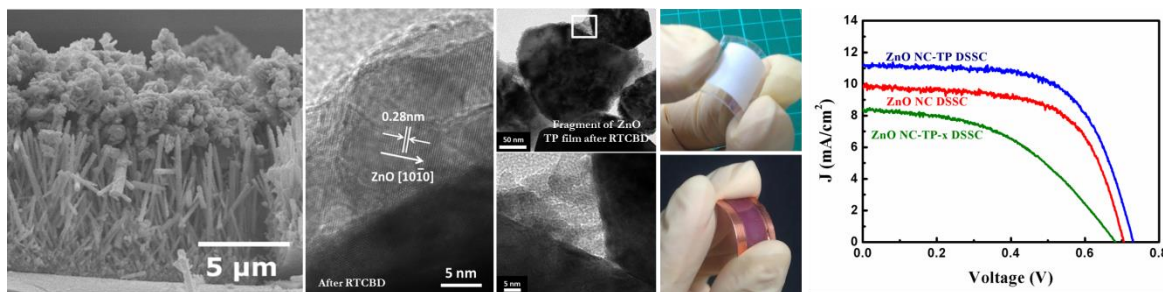
ACS Appl. Mater. Interfaces, 2013

Fast-Switching Photovoltachromic Cells with Tunable Transmittance

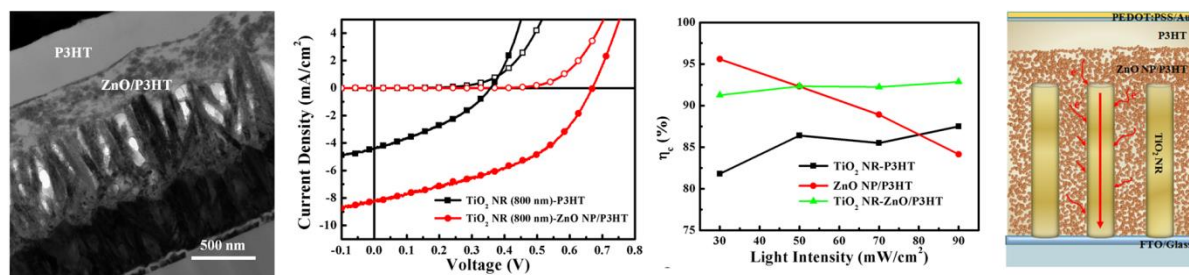
(ACS Nano, 2009; US & Taiwan Patents, 2012)



Room-Temperature Chemical Integration of ZnO Nanoarchitectures on Plastic Substrates for Flexible Dye-Sensitized Solar Cells (2013)



Efficient Electron Collection in Hybrid Polymer Solar Cells: In-Situ-Generated ZnO/Poly(3-hexylthiophene) Scaffolded by a TiO₂ Nanorod Array (J. Phys. Chem. Lett. 2013)



Morphology and Interfacial Energetics Controls for Hierarchical Anatase/Rutile TiO₂ Nanostructured Array for Efficient Photoelectrochemical Water Splitting

(ACS Appl. Mater. Interfaces, 2013)

