Investigation of Hydrothermally Processed Nanomaterials for Integration with Third Generation Photovoltaics

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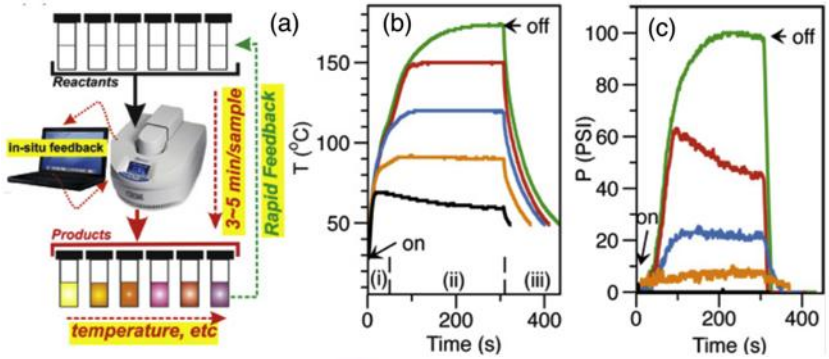
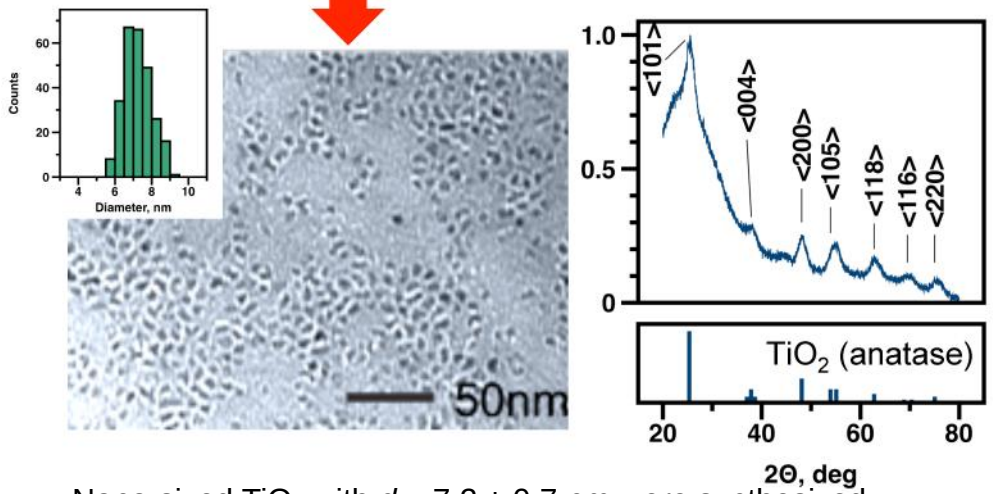
Microwave Mediated Hydrothermal Processing



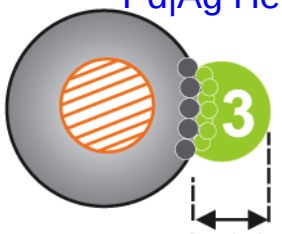
TiO_2/Qdot Hybrids

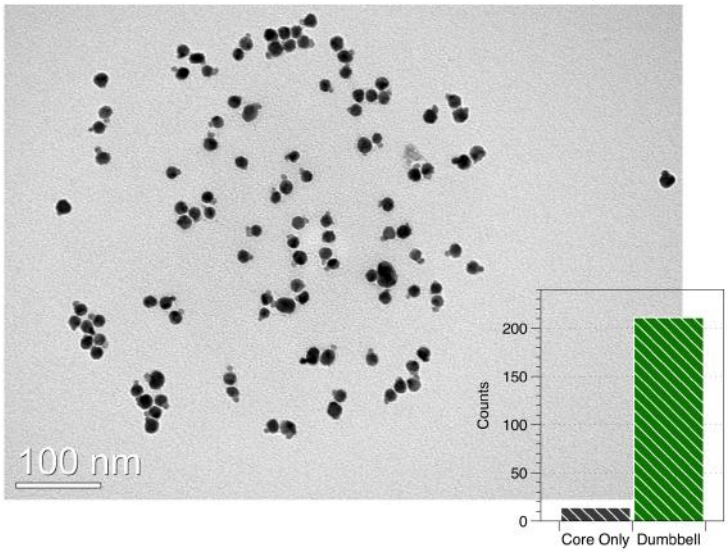


Nano-sized TiO_2 with d = 7.2 ± 0.7 nm were synthesized Using microwave/hydrothermal heating, resulting in anatase Crystal structures. TiO_2|Qdots heterostructures also fabricated.

Asymmetric Core/Alloy Particles

Pd|Ag Heterostructures





Using similar methodology, Au_xPd_{1-x}|Ag Janus-particles fabricated with high morphological yields. Growth due to nature of alloy NP interface and the extent of lattice mismatch/surface tension.