

## Synthesis of Iron Pyrite Nanoparticles by hot-injection method: Structural and Optical Properties

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Iron pyrite (FeS<sub>2</sub>) nanocrystals (NCs) are cheap, non-toxic, large optical absorption coefficient and narrow bandgap ( $E_g=0.95$  eV) is the advantaged candidate for the active layer in the Bulk Hetero-junction solar cells. In this work, the colloidal iron pyrite NCs were synthesized by simple hot-injection method by using FeCl<sub>2</sub>·4H<sub>2</sub>O and sulfur salt as precursor materials, octadecylamine and diethyl ether as solvent materials. The X-ray powder diffraction (XRD) shows the single-phase of iron pyrite and high resolution transmission electron microscope (HRTEM) measurement indicates the new shape of iron pyrite NCs, elongated-shape that are believed to show superior performance compared to spherical NCs. The optical properties of iron pyrite NCs were measured by UV-Vis (UV) and photoluminescence (PL) spectroscopy.

### Acknowledgement

The authors were supported from the second phase of BK21 program.