Properties of Sonochemically Prepared $CuIn_xGa_{(1-x)}S_2$ and $CuIn_xGa_{(1-x)}Se_2$

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Chalcopyrites copper indium gallium sulfide ($CuIn_xGa_{(1-x)}S_2$ or CIGS) and copper indium gallium selenide ($CuIn_xGa_{(1-x)}Se_2$ or CIGSe) are semiconductors useful for the manufacture of solar cells. In this work sonochemical method has been applied to fabricate nanoparticles of these materials. The product was characterized by using techniques such as powder X-ray diffraction, scanning electron microscopy, energy dispersive X-ray analysis, high-resolution transmission electron microscopy, selected area electron diffraction, and optical diffuse reflection spectroscopy. The electrical and photoelectrical properties of the fabricated nanomaterials have been investigated, too. The presented CIGS and CIGSe nanomaterials have optical and electrical properties suitable for photovoltaics.

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