

Supporting Information

Aqueous colloidal CuInS₂ for quantum dot sensitized solar cells

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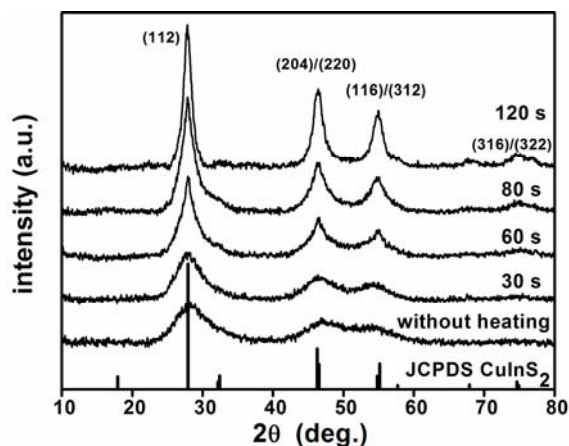


Fig. 1 XRD patterns of the CuInS₂ powder without and with 30 s, 60 s, 80 s and 120 s heating under 280 °C in air. The standard diffraction peak (JCPDS card File No 85-1517) is provided at the bottom of the figure.

The CuInS₂ colloid was precipitated by adding a large amount of acetone. CuInS₂ powder was obtained by centrifugation and washed with water and ethanol for several times. (Insufficient cleaning would cause NaCl impurity to remain in the powder). After drying in the vacuum oven, the CuInS₂ powder samples were heated at 280 °C in air for different time and then characterized by XRD. As shown in Fig. 1, to the CuInS₂ samples with and without heat treatment, their diffraction peaks round 27.8, 47 and 55° were detected, in good accordance with the standard patterns of chalcopyrite CuInS₂. And as heating time increased, other CuInS₂ diffraction peaks of (316)/(332) appeared.

Furthermore, by using Debye-Scherrer equation, diameters of the CuInS₂ nanoparticles were estimated to be 2.2 nm for 0 s, 2.5 nm for 30 s, 3.5 nm for 60 s, 4.2 nm for 80 s and 7 nm for 120 s heating.