RF Electromagnetic Field Treatment of Tetragonal Kesterite CZTSSe Light Absorbers

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Abstract: In this work, we propose a method to improve electro-optical and structural parameters of light-absorbing kesterite materials. It relies on the application of weak power hydrogen plasma discharges using electromagnetic field of radio frequency range, which improves homogeneity of the samples. The method allows to reduce strain of light absorbers and is suitable for designing solar cells based on multilayered thin film structures. Structural characteristics of tetragonal kesterite Cu2ZnSn(S, Se)4 structures and their optical properties were

studied by Raman, infrared, and reflectance spectroscopies. They revealed a reduction of the sample reflectivity after RF treatment and a modification of the energy band structure.

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