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**Plasma assisted selenization for the preparation of CuInGaSe absorbers** ZHI HUANG, P.F. LUO, Z. CEVHER, Y.H. REN, City University of New York, MATERIAL FABRICATION LAB TEAM — Cu(In,Ga)(S,Se)2 (CIGS) compound has attracted much attention most recently because of their application in high efficient photovoltaic devices. In order to obtain a decent CIGS photovoltaic device, it is very critical to optimize the metallic precursor layers and choose a suitable selenization technique. We demonstrate a plasma assisted selenium cracking method for preparing CIGS semiconductor films using elemental selenium vapor. The two stage selenization process includes the modification of the ionization state of Se species by radio frequency plasma and the deposition of a selenium cap layer above CuInGa metallic precursors. A CIGS absorber layer with improved homogeneity and crystallization is realized after a post annealing process. The result is explained by the enhancement of reaction kinetics between the reduced Se phase and metallic precursor layers.

Zhi Huang
City University of New York

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