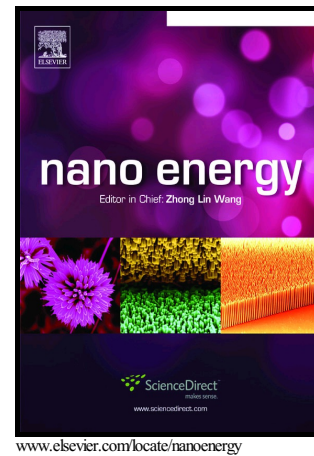


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## The alterations of carrier separation in kesterite solar cells

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### ABSTRACT

$\text{Cu}_2\text{ZnSn}(\text{S,Se})\text{S}_4$  (CZTSSe) thin films have attracted attention as low-cost absorber materials for solar cells; however, further studies are required to develop flexible solar cells from this material and to achieve a high power conversion efficiency. Toward this objective, this work investigated eight types of precursors applied on flexible Mo foil substrates, some of which also contained a layer of NaF. Secondary phases, defects, and

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