

Abstract Submitted
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Experimental evidence of enhanced optical absorption in ultra-thin film CdTe PV absorbers via embedded metal nanopatterns AARON H. ROSE, MICHELLE L. SOLOMON, MICHAEL J. BURNS, MICHAEL J. NAUGHTON, Boston College — We show an increase of optical absorbance in ultra-thin film cadmium telluride solar absorbers by embedded metal nanopatterns (EMN) in the absorber material. Our experimental results are supported by FEM simulations, which also indicate minimal energy loss in the metal. As opposed to locating the metal nanostructures outside of the active region, e.g. at the back or top contact of a solar cell, embedding the structures within the active region gives the greatest absorbance enhancement [1-3]. Previous work has shown a similar increase in absorbance for an amorphous silicon solar medium [1-3], suggesting that EMN is a general light management scheme that can be applied to any thin film photoabsorber. Such light trapping may further yield a viable route to ultra-thin hot electron solar cells [4,5].

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