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**Effects of Back Contact Materials on Substrate Configuration CdTe Solar Cells**[1] NATHAN G.F. REAVER, KRISTOPHER WIELAND, ALVIN D. COMPAAN, Dept. of Physics & Astronomy, University of Toledo — Substrate configuration CdTe photovoltaics has the potential to provide both a reduction in the production costs and improved power to mass ratio. In this study the effect of copper placement in the cells, sequence of $CdCl_2$ treatment, and the effect of back contact material on cell performance was examined. Cells were deposited on a Mo coated conductive substrate, on stainless steel or on TCO coated glass, using RF magnetron sputtering. Three different back contacts were used, copper-gold as used in superstrate configuration cells, $Sb_2Te_3$, and ZnTe:N. Cells were measured using a solar simulator at one sun to obtain current density vs. voltage curves and cell efficiencies. The structure that gave the best performance was stainless steel/Mo/$Sb_2Te_3$/CdTe/CdS/ZnO/ZnO:Al, with the best cell having an efficiency of 5.34%.

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