Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supplementary information

Effects of Gas-phase and Wet-chemical Surface Treatments on Substrates Induced *Vertical, Valley-Hill & Micro-granular* Growth Morphologies of Close Space Sublimated CdTe Films

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Substrates	Morphology	Morphology	Optical/Electrical Properties	Reference
Pristine Cu Foil	Platelet structural grains with pure CdTe	Platelet	Good optical absorbance with high resistance for charge carriers	This work
HNO_3 treated Cu foil	Porous grains with presence of CdO and Te		Improved light mater interaction and facilitates the charge transport	
Plasma treated Cu foil	Sharp distinctive edged grains with TeO_2 and CdO impurities		Reduction in light mater interaction and defect states for smooth charge transport	
Pristine Al foil	Large grains with polycrystalline CdTe	Valley Hill	Wide range optical absorption with poor electrical performance	This work
HNO_3 treated Al foil	Broken crystal structure due to change in surface energy with modified orientation		Improved optical absorption in the NIR region with high charge transport performance comparatively	
Plasma treated Al foil	Incongruous smaller grains with strain in facets		Improved optical absorption in the NIR region with reduction in charge transport performance	
Pristine Ni foil	Grains with traces of elemental Cd and Te		Increased interaction with high energy photons with good charge transport properties	This work
HNO_3 treated Ni foil	Change in preferred orientation of polycrystalline CdTe		Improved light mater interaction due to reduced elemental metals and resistance for charge carriers	

Plasma treated Ni foil	Similar morphological properties of CdTe on pristine Ni foil with presence of elemental Cd and Te		Similar light mater interaction of CdTe on pristine Ni foils with high resistance in electrical properties	
Pristine SS foil	Presence of Fe_3O_4 giving rise allowing oxide formation	Chained grains	Very good light mater interaction with high resistive charge transport	This Work
HNO_3 treated SS foil	Surface level oxides were removed due to the treatment forming pure CdTe		Improvement in charge carriers with reduction in optical properties	
Plasma treated SS foil	Good CdTe deposition with formation of oxides		Very good electrical properties with good optical absorption	
SS foil with Mo as contact	Pure phase CdTe similar to CdTe on glass Substrate	Micro granular	--	1
SS foil with RF sputtered Mo	Stress and strain of the film due to substrate temperature	Micro granular	7% PCE with SnO_2/ITO front contact	2
Polymide Upilex-S foil with Cu, Ag, Mo	Pure phase CdTe	Micro granular		3
Ni foil RF sputtered CdTe	Amorphous with improved crystal structure with substrate temperature	Micro granular	Good optical absorption and charge carrier mobility	4
EPD CdTe on Ni foil	Good CdTe polycrystalline phase	Bubble-wrap structure	Good absorption coefficient and photovoltaic characteristics	5
Heat treated Cu foil with RF sputtered CdTe	Polycrystalline CdTe	CdTe nanorods	Varied absorption due to change in deposition time	6

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