

# Zn(O,Se) AS A NOVEL BUFFER LAYER FOR THIN FILM SOLAR CELLS

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Zinc oxy-selenide Zn(O,Se) is a novel buffer layer which can replace the conventional CdS buffer layer in thin film solar cells (SCs). In this study we report for the first time the successful application of Zn(O,Se) layers as buffer layer for CdTe thin film solar cell. Zn(O,Se) layers have been deposited onto fluorine-doped tin oxide coated glass substrate

(FTO/glass) at 500 °C by pulsed laser deposition (PLD) in high vacuum. XRD analysis confirmed the formation of single phase ternary Zn(O,Se) film at 500 °C. HR-SEM micrograph show the formation of homogenous, dense and well adherent layers to substrate surface. UV-Vis investigation illustrated the transparency of Zn(O,Se) layers in visible part of the spectrum. Hall effect measurements confirmed n-type conductivity of deposited Zn(O,Se) films.

Based on the aforementioned finding, we developed a prospective superstrate configuration FTO/Zn(O,Se)/CdTe/Te/Ni solar cell exhibiting a photoconversion efficiency of 7.6%. Our findings confirm the potential of Zn(O,Se) to replace conventional CdS buffer layers in optoelectronic devices.

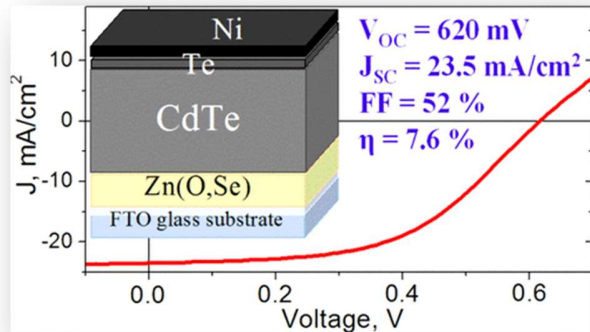


Figure 1:  $I - V$  curve and solar cell structure



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