Supplementary materials: Synthesis and Properties of p-Si/n-$Cd_{1-x}Ag_xO$ Heterostructure for Transparent Photodiode Devices

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Preparation process of Ag doped CdO films:

Silver nitrate ($AgNO_3$) was used as dopant precursor with different concentrations are given in table S1. We have taken 0.1 molar concentration (0.1 M) of cadmium acetate and different Ag doping concentrations (0.001 M, 0.002 0.003 M and 0.004 M), by using the nominal molar concentration formula M=n/v; here, *m* is the molar concentration, *n* is the moles of solute and *v* is the litres of solution. Before the deposition process, the amorphous glass substrates were cleaned by chromium acid and deionized water one by one, and then preheated at 100 °C for 12 h to remove the surface contaminations.

Table 1. Preparation of Ag doping concentrations for CdO thin films (0.1 M).

$Cd_{1-x}Ag_xO$	Cd concentraion	Ag concentration	Solvent volume
$Cd_{1-0}Ag_0O$	Cd(1.0)	Ag(0.00)	20 mL
$Cd_{0.99-0.01}Ag_{0.01}O$	Cd(0.99)	Ag(0.01)	20 mL
$Cd_{0.98-0.02}Ag_{0.02}O$	Cd(0.98)	Ag(0.02)	20 mL
$Cd_{0.97-0.03}Ag_{0.03}O$	Cd(0.97)	Ag(0.03)	20 mL
$Cd_{0.96-0.04}Ag_{0.04}O$	Cd(0.96)	Ag(0.04)	20 mL

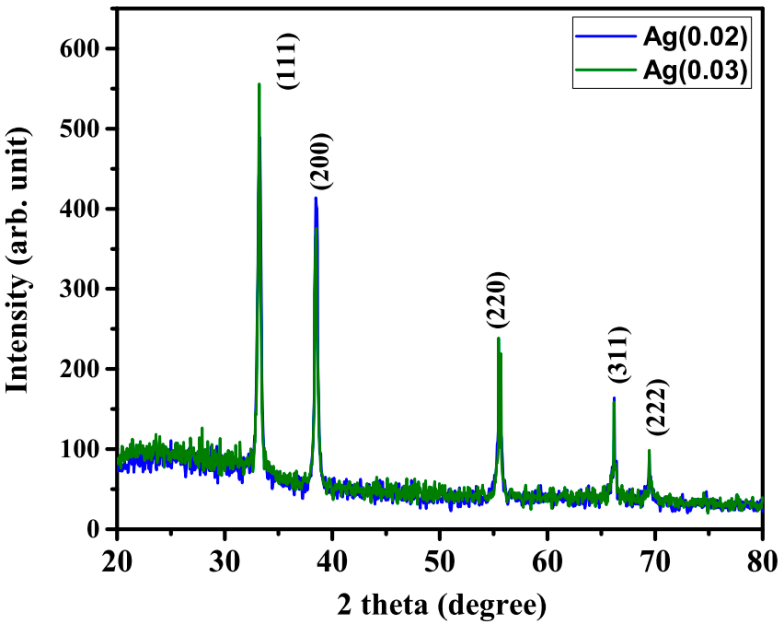

Figure 1. The comparative cure for 2at.% and 3at.% of Ag doped CdO thin films.

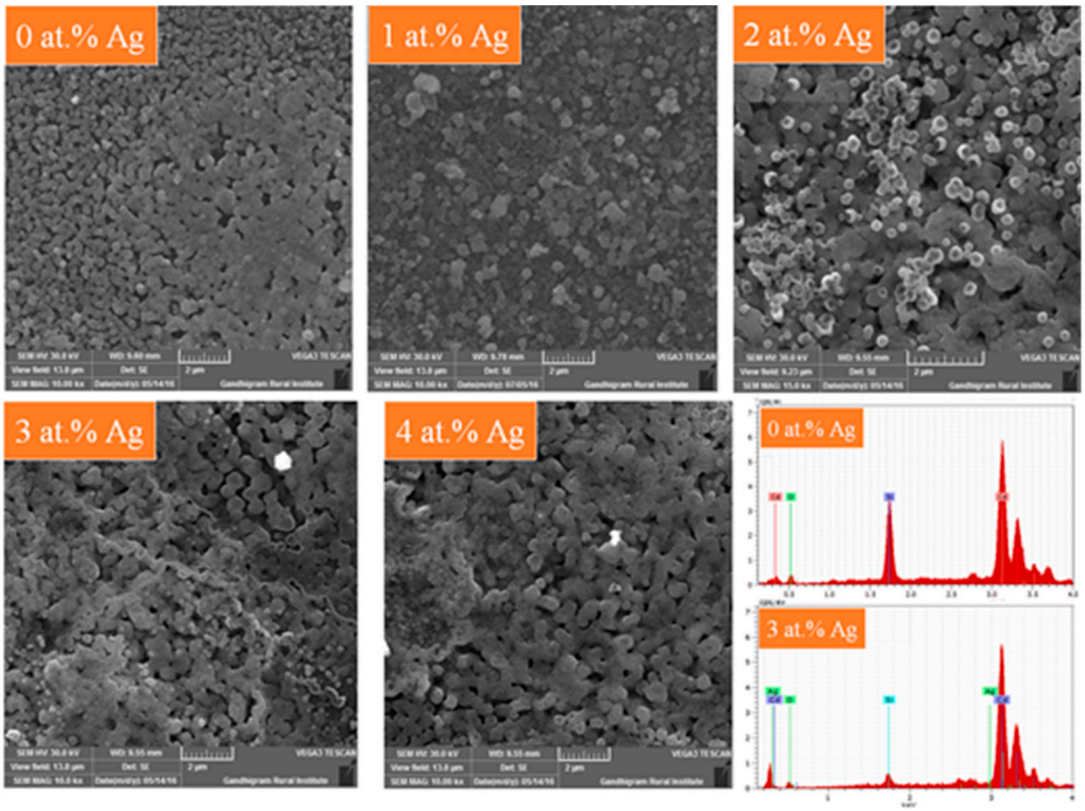

Figure 2. The scanning electron micrographs for the prepared CdO thin films with EDX spectrum for pure and 3at.% Ag.