



## **Ions implantation on the ZnO thin films deposited by magnetron sputtering system**

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Zinc oxide (ZnO) has drawn a significant attention worldwide due to its remarkable properties and potential applications in various fields. Zinc oxide films were deposited on flexible polyethylene terephthalate (PET) substrates by using direct current (DC) magnetron sputtering at different Ar:O<sub>2</sub> gas ratio. The minimum energy band gap of ZnO (3.23 eV) was obtained on the PET substrate. Transition metal ions such as copper, cobalt and nickel ions were implanted in ZnO films using Pelletron accelerator at room temperature at different doses of  $1 \times 10^{11}$ ,  $1 \times 10^{12}$ ,  $1 \times 10^{13}$ , and  $1 \times 10^{14}$  ions/cm<sup>2</sup> by keeping the ion energy constant at 300 keV. X-ray diffraction revealed c-axis oriented ZnO film having hexagonal wurtzite structure. The crystallite size of ZnO film was determined. The lattice parameter of ZnO was decreased with the implantation of Copper ion at different doses. The UV-Vis spectroscopic analysis revealed a decrease in band gap of ZnO film and it was increased at higher ion dose. However, in the case of silver ion implantation, significant structural damage was done in ZnO film which is due to its high atomic number as compared to cobalt and copper.

### References

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Figure xx

**Note: Abstract should be in (full) double-columned one page.**