

Photoemission Analysis of Cu₂O Thin Films Doped by Nitrogen

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Abstract. Recently, many applications take benefit from using transparent conductive oxides (TCOs) and since Cu₂O-based materials contain only widespread non-toxic elements they seem to be more than suitable for various fields of utilization. In the literature there are many examples describing n-type TCOs, however it is difficult to find p-type materials with sufficient performance. Nitrogen doping of Cu₂O films is a promising way to modify their electrical and optical properties and enhance their performance [1,2].

This work studies Cu₂O:N films prepared by reactive high-power impulse magnetron sputtering in Ar+O₂+N₂ atmosphere with various power density and N₂ fraction in (Ar+N₂) mass flow. The effect of N incorporation on electrical and optical properties is investigated with the special focus on evolution of the states measured by XPS and UPS.

REFERENCES

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