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## Effect of Background gas and substrate temperature on ZnO:Zn thin films

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**Abstract content** (Max 300 words) **Formatting & Special chars**

The dependence of the structural and optical properties of ZnO:Zn thin films deposited by Pulsed laser deposition on the preparation conditions has been investigated. All the films showed highly c-axis orientation, and their crystallinities were improved with an increase in the substrate temperature. The stress in the thin films was varied (-12.7 to -7.30 GPa) according to the chamber atmosphere gas. The minimum value was obtained in the case of the Oxygen background gas. The optical bandgap varied from 3.12 to 3.19 to 3.20 eV with changing the deposition chamber gas from Argon - Vacuum to Oxygen, respectively, it also varied from 3.14 to 3.20 eV in the case of the variation in the substrate temperatures from 200 to 400 °C. The thin films obtained in the Oxygen atmosphere showed strong photoluminescence emission around the orange region (627 nm), while a weak emission around 450 and 753 nm was observed for the Argon atmosphere film and ultra violet emission (UV) was obtained for all deposition conditions. These ZnO:Zn thin films may be used in the design, simulation and fabrication of optoelectronics devices such as white light emitting diode and sensor/actuator in hard disk drives.

**Apply to be considered for a student award (Yes / No)?**

yes

**Level for award (Hons, MSc, PhD, N/A)?**

MSc

**Main supervisor (name and email) and his / her institution**

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

yes

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yes

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