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Characterisation of Aluminium/Yttrium Double-doped Tin Oxide Nanoparticles using XRD Patterns.

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

In this report, prepared SnO₂ nanoparticles were characterized using XRD patterns. A PW1830 system X-ray diffractometer with anode of Co (wavelength of 1.7889Å of Co K α) and also that of Cu (wavelength of 1.5405Å of Cu K α) was used to characterize the samples. Four samples of aluminium/yttrium double-doped tin oxide were previously synthesized at different temperatures (200 oC, 400 oC, 600 oC, 800 oC and 1000 oC). The powder samples were loaded into glass sample holders taking care not to have them in preferred orientations. X-ray diffraction patterns were recorded over 2 θ angular ranges of 50 – 80o for Co anode and 4.3050 – 67.2190o for Cu anode with a step size of 0.025o. The crystallinity was shown to improve with an increase in temperature. Results also revealed that double doping significantly reduced the grain growth of SnO₂. The lattice parameters (the d-spacing) were calculated using a computer program. The shape of the XRD patterns showed the tetragonal structure of SnO₂ nanoparticles with the help of theoretical deductions.

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Yes

**Level for award
 (Hons, MSc,
 PhD)?**

Hons

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

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Yes

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