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## Electrospun polyethylene oxide nanocomposite fibers reinforced with VO<sub>2</sub> nanoparticles: Fabrication and optical analysis

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### Abstract content <br> (Max 300 words)

The manufacturing of pure polyethylene fibers and electric PEO/VO<sub>2</sub> nanocomposite fibers is explored by an electrospinning process. A uniform, bead-free fiber production process is developed by optimizing electrospinning conditions: polymer concentration, applied electric voltage. The experiments demonstrate that slight changes in operating parameters may result in significant variations in the fiber morphology and nanoparticles density. The nanocomposite fibers were characterized by optical electron microscopy, X-ray diffraction (XRD) and UV-Vis Spectrometer. Significant effect on the crystallinity of PEO and a strong interaction between PEO and VO<sub>2</sub> nanoparticles is demonstrated. The electrical properties of the nanoparticles in the polymer nanocomposite fibers are different from those of the dried as received nanoparticles.

### Apply to be<br> considered for a student <br> award (Yes / No)?

yes

### Level for award<br>(Hons, MSc, <br> PhD)?

PhD

### Main supervisor (name and email)<br>and his / her institution

Prof Malik Maaza

### Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

yes

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**Session Classification:** Poster1

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