

## Research Highlights from Discipline of Physics:

### Quantification of Short-Range Order in Amorphous Materials

Amorphous materials are often said to have “short-range order” of crystallinity. This short-range is used very qualitatively and has little significance in understanding the nature of a material. A methodology has been proposed to quantify this crystallinity, similar to nanomaterials, using Raman spectroscopy. A theoretical line-shape, derived by considering the phonons under a confined system, appears to be explaining the observed Raman spectra from amorphous silicon. The line-shape is observed to be dependent on the abovementioned “short-range order” and hence can be used to quantify the same. Additionally a very simple relation between the order and the Raman peak position is reported.

More reading available at:

Yogi et al., *Analytical Chemistry*

<https://pubs.acs.org/doi/abs/10.1021/acs.analchem.8b01352>

### Fabrication of Fast Electrochromic Device

A fast and stable power efficient electrochromic device has been designed and fabricated using hybrid materials by combining viologen (Organic) and metal oxide (inorganic) materials. The device shows superior properties as compared to metal oxide only electrochromic device.

More reading available at:

Mishra et al. *ACS Appl. Nano Mater.*

<https://pubs.acs.org/doi/abs/10.1021/acsanm.8b00871>

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