Contribution ID: **833** Contribution code: **THPM100** Type: **Poster Presentation**

Band gap modification in few-layer MoS2 using Pelletron accelerator

Thursday 11 May 2023 16:30 (2 hours)

The unique electronic band structure properties of two-dimensional (2D) materials allow for a multitude of cutting-edge applications involving electrical and optoelectronic devices. Atomically thin 2D materials such as MoS2 face major obstacles during synthesis and processing into precise electronic band gap properties adjustments. Few-layer MoS2 films are synthesized using alkali halide (NaCl) and, ion beams have been used to modify the electronic band gap and result in subsequent absorption properties of few-layer MoS2.
The band gap tuning in MoS2 is highly desirable for optimizing their applications in solar cells, photodetectors, and optoelectronic devices. We have already shown the effect of biaxial strain on the structural, elastic, and electronic properties of MoS2 [1]. In the present work, we are reporting 100 MeV Ni7+ ion irradiation-induced blue shift in MoS2, with ion fluences of 1×1011 to 1×1013 ions/cm2. UV-vis spectroscopy shows the absorption peak shifts from 680 nm to 674 nm for the A-peak and from 630 nm to 624 nm for the B-peak.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: TRIPATHI, Ambuj (Inter University Accelerator Centre); KHAN, Mayur (Inter University Accelerator Centre)

Presenter: KHAN, Mayur (Inter University Accelerator Centre)

Session Classification: Thursday Poster Session

Track Classification: MC8: Applications of Accelerators, Technology Transfer and Industrial Relations and Outreach: MC8.U02: Materials Analysis and Modification