



Contribution ID: 254

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## Micro-indentation Hardness Increase in Ion Implanted Boron Nitride

*Tuesday, 4 July 2017 17:10 (1h 50m)*

Previously we have shown that implantation of the hexagonal allotrope of boron nitride with light ions (e.g. He<sup>+</sup>, Li<sup>+</sup>, B<sup>+</sup>) produces a surface layer containing nanoparticles of the much harder cubic allotrope, as revealed by Raman spectroscopy, X-ray diffraction and electron microscopy. We now show that the irradiated layer is measurably harder when interrogated by micro-indentation which probes a layer comparable to the ion range. The hardness value increases reproducibly with the ion fluence, confirming that the latter is responsible for it. There are possible implications for the surface hardening of BN components after they have been configured in the easily machinable hexagonal form. Some aspects of the hardening mechanism are discussed.

**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**

Prof. T.E. Derry, Trevor.Derry@wits.ac.za  
University of the Witwatersrand

Co-supervisor Dr. Morgan Madhuku, Madhuku@tlabs.ac.za  
iThemba LABS (Gauteng)

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

No

**Primary author:** Mr LISEMA, Lehlohonolo (Wits)

**Co-authors:** Dr ARADI, Emily (University of Huddersfield); Dr MADHUKU, Morgan (iThemba LABS); Dr MACHAKA, Ronald (CSIR); Mr MAGABE, Thabang (Wits); Prof. DERRY, Trevor (University of the Witwatersrand)

**Presenter:** Mr LISEMA, Lehlohonolo (Wits)

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