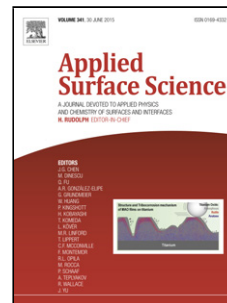


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Title: Probing local work function of electron emitting Si-nanofacets

Author: <ce:author id="aut0005"
author-id="S0169433217300284-
f101edadf98458dcc69bd25c2057f56f"> Tanmoy
Basu<ce:author id="aut0010"
author-id="S0169433217300284-
71fdca5efd37691508e028c24d903cc8"> Tapobrata
Som



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Highlights

- The present report demonstrates tunable field emission at room temperature from ion-beam fabricated Si-NFs. It is observed that the field emission from the nanofacets are quite stable and the FE process is governed by Fowler-Nordheim tunnelling.
- Si-NFs offer a very low turn-on field and a high enhancement factor at the lowest ion exposure time. It is observed that the value of the turn-on field increases and the enhancement factor decreases with increasing ion exposure time.
- We demonstrate a spatial variation in the work function map of the Si-NF arrays using Kelvin probe force microscopy. The observed higher value of the work function at the apexes than sidewalls should lead to suppression of electron emission.
- Inhomogeneous oxidation of Si nanostructures and their different crystallographic orientations can be attributed to be the two main factors to cause the spatial variation in

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