

# SAIP2014



Contribution ID : 315

## **X-ray reflectivity and surface Brillouin studies of rf magnetron sputtered NbN thin films**

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### **Abstract :**

NbN thin films have been extensively used as protective coating for cutting tools due to their excellent properties of high melting temperature, and high resistance against oxidation and wear and tear. In this work, NbN thin films were deposited on etched Si(100) at room temperature using rf magnetron sputtering to establish the role of stoichiometry and microstructure on the elastic constants based on zone structure model. X-ray reflectivity (XRR) has been used to extract the deposition rate for velocity dispersion curves, the interfacial roughness and the mass density of the NbN films. The dependence of stoichiometry on the ad atom energy (sputter powers) was determined by heavy ion elastic recoil detection analysis (HI-ERDA). Surface Brillouin scattering studies on NbN films have shown the propagation of Rayleigh and Sezawa peaks indicative of high film quality. The elastic constants of NbN at various powers will be extracted from the velocity dispersion curves using numerical approaches.

### **Award :**

Yes

### **Level :**

PhD

### **Supervisor :**

Prof. em J. D. Comins

### **Paper :**

No

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