




भारत सरकार / Government of India  
परमाणु ऊर्जा विभाग / Department of Atomic Energy  
होमी भाभा राष्ट्रीय संस्थान / Homi Bhabha National Institute  
राजा रामन्ना प्रगत प्रौद्योगिकी केन्द्र  
Raja Ramanna Centre for Advanced Technology



## HBNI Faculty Profile

<b>Name</b>	<i>Mohammed H. Modi</i>	
<b>Designation</b>	<i>Professor</i>	
<b>Research Areas</b>	<i>X-ray Thin Films, Multilayers; X-ray Optical Properties, Soft X-Ray Beamlines and Characterization Techniques</i>	
<b>Research Profile</b>	<i>My research work focuses on the study of compound materials suitable for high brilliance synchrotron optics. This involves the study of x-ray optical behaviour and its correlation with the electronic properties in different compound materials. In addition, I am working on the development of different soft x-ray based techniques for characterization of x-ray thin films and multilayer structures. Our main emphasis is on utilizing the soft x-ray techniques in general and the resonant soft x-ray reflectivity technique in particular for analysing the low contrast thin film structures.</i>	
<b>Ten Selected Recent Publications</b>		
<b>1.</b>	Mohammed H. Modi, Raj Kumar Gupta, Praveen Kumar Yadav, Shruti Gupta, C Mukherjee, Mourad Idir, "Effect of electronic transitions on near edge optical properties of off-stoichiometric boron carbide thin films" <b>J. Appl. Phys. 133</b> , 165302 (2023)	
<b>2.</b>	Praveen K Yadav, Raj Kumar Gupta, Shruti Gupta, C Mukherjee, UK Goutam, Mohammed H Modi, "Boron carbide (B <sub>x</sub> C) thin film surface characterization after graphitic carbon removal using low pressure oxygen gas RF plasma" <b>Applied Optics 62</b> , 1399 (2023).	
<b>3.</b>	Mohammed H. Modi, Praveen K. Yadav, Rajkumar Gupta, Shruti Gupta, "Design of a soft x-ray emission spectrometer setup for soft x-ray reflectivity beamline of Indus-2" <b>J. Phys.: Conf. Ser. 2380</b> , 012049( 2022 ).	
<b>4.</b>	Mohammed H. Modi, Shruti Gupta, Praveen K. Yadav, Rajkumar Gupta, Aniruddha Bose, Chandrachur Mukherjee, Philippe Jonnard and Mourad Idir, "Study of	



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	interface reaction in a B4C/Cr mirror at elevated temperature using soft X-ray reflectivity” <b>J. Synchrotron Rad. 29</b> , 978 (2022);
5.	Kiranjot, Mohammed H. Modi, “Effect of surface oxidation on soft x-ray optical properties of ion beam sputter deposited amorphous AlN thin film” <b>J. Appl. Phys. 130</b> , 195302 (2021)
6.	M. Sinha, A. Singh, R. Gupta, A.K. Yadav, Mohammed H. Modi, “Investigation of soft X-ray optical properties and their correlation with structural characteristics of zirconium oxide thin films” <b>Thin Solid Films 721</b> , 138552 (2021).
7.	P. K. Yadav, R. K. Gupta, A. K. Choubey, S. Ali, U. K. Goutam, and M. H. Modi, “Carbon removal from a mirror-like gold surface by UV light, RF plasma, and IR laser exposure: a comparative study” <b>Applied Optics 60</b> , 89 (2021).
8.	Kiranjot, Mohammed H. Modi, R.K. Gupta, M. Sinha and P.K. Yadav, “Influence of spin orbit splitting and satellite transitions on nickel soft X-ray optical properties near its L <sub>2,3</sub> absorption edge region” <b>J. Synchrotron Rad. 27</b> , 1633 (2020).
9.	M. Sinha, R.K. Gupta, Kiranjot, Amol Singh, Mohammed H. Modi, “Effect of zirconium oxide local structure on soft X-ray optical properties near the oxygen K-edge region” <b>J. Appl. Phys. 128</b> , 065302 (2020).
10.	Kiranjot, R. Dhawan, R.K. Gupta, P. Yadav, Mohammed H Modi, “Interface asymmetry in AlN/Ni and Ni/AlN interfaces: a study using resonant soft x-ray reflectivity” <b>Applied Surface Science, 529</b> , 147199 (2020).