

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

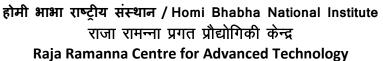


HBNI Faculty Profile

Name		Dr Indranil Bhaumik		
Designation		Professor		
Research Area		Growth of single crystal; Structure-property correlation; Phase transition; Investigation of Ferroic & electronic phenomena and Optical & spectroscopic property; Defect chemistry and characterization.		
Research Profile		Our research focuses on the understanding the correlation between crystal structure and ferroic as well as optical properties of material, mainly in the single crystal form. The research area spans over linear & non-linear optics, laser materials, piezoelectrics, ferroelectrics, wide band-gap semiconductors and scintillators. Single crystals are grown in the lab by several sophisticated techniques such as Czochralski method, optical floating zone, Bridgmann technique and solution growth technique. Several specialized crystal growth equipment are designed and developed inhouse. We also aim to tailor the properties of materials by doping the host crystal for non-linear optical, laser, piezo-and ferro-electric applications.		
Ten Selected Recent Publications				
1.	K.S. Samantaray, R. Amin, P. Maneesha, Indranil Bhaumik, S. Sen, "Effect of electrical poling on the structural, vibrational, and electrical properties of 0.94(Na _{0.5} Bi _{0.5} TiO ₃)-(0.06-x)CaTiO _{3-x} (BaTiO ₃) lead-free ceramics", Ceramic International, 49 (2023) 14310.			
2.	A. Sharma, P. Yadav, R. Bhatt, S. Banik, G. Singh, Indranil Bhaumik, "Effect of Nb Substitution on the Electronic Property of Lead-free piezoelectric (Na _{0.41} K _{0.09} Bi _{0.50})TiO ₃ , Single Crystal: Optical Absorption and Photoelectron Study", J. Applied Physics 132 (2022) 205103.			
3.	P. Yadav, A. Sharma, Indranil Bhaumik, G. Singh, "Effect of electric field induced structural ordering on photo-luminescence and piezoelectric response of praseodymium doped (Na _{0.41} K _{0.09} Bi _{0.5})TiO ₃ ceramics", J. Applied Physics 132			



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	(2022) 224104.			
4.	A. Sharma, P. Yadav, R. Bhatt, M. Soharab, G. Singh, Indranil Bhaumik, "Refractive			
	index and domain structure of undoped and Nb doped (Na _{0.41} K _{0.09} Bi _{0.50})TiO ₃ (NBT-			
	KBT) single crystal grown at MPB composition", Optical Materials 133 (2022)			
	113021.			
5.	P. Yadav, A. Sharma, H. Srivastava, Indranil Bhaumik, G. Singh, V.S. Tiwari, "A			
	correlation of piezoelectricity and photoluminescence of europium doped			
	(Na _{0.41} K _{0.09} Bi _{0.5})TiO ₃ with ferroelectric and structural ordering,", Ceramics			
	International 48 (2022) 3243.			
6.	M. Soharab, R. Bhatt, A. Saxena and Indranil Bhaumik, Effect of Cr co-doping on			
	the optical absorption and emission characteristics of Yb:YVO ₄ single crystals			
	grown by OFZ technique, Optical Materials 128 (2022) 112434.			
7.	R. Amin, K. Samantaray, S. Ayaz, S.N. Sarangi, Indranil Bhaumik, S. Sen, "Room			
	temperature multiferroicity with enhanced ferroelectric and ferromagnetic			
	properties in Ba _{0.75} Pb _{0.25} Ti _{1-x} Fe _x O ₃ ,", J. Alloys and Compounds, 897 (2022) 162734.			
8.	K.S. Samantaray, R. Amin, E.G. Rini, Indranil Bhaumik, A. Mekki, K. Harrabi, S. Sen,			
	"Defect Dipole Induced Improved Electrocaloric Effect in Modified NBT-6BT Lead-			
	Free Ceramics", J. Alloys and Compounds, 903 (2022) 163837.			
9.	Indranil Bhaumik, V.L. Ananthu Vijayan, R. Bhatt, M. Soharab, S. Ganesamoorthy,			
	A.K. Karnal, "Crystal Interface Control at Low Thermal Gradient and Investigation			
	of the Effect of Cr on the Crystal Structure and Optical Properties of Bismuth			
	Silicate", Phys. Status Solidi B, 258 (2021) 2100315. , (This invited article also			
	appears in: 60 years of pss)			
10.	M. Soharab, Indranil Bhaumik, R. Bhatt, A. Saxena, A.K. Karnal, "Unusual			
	absorption and emission characteristics of Cr co-doped Nd:GdVO ₄ laser gain			
	crystal", J. Alloys and Compounds 886 (2021) 161182.			