




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	<i>Dr. B. N. Upadhyaya</i>	
Designation	<i>Professor</i>	
Research Area	<i>Solid-state Laser, Nd:YAG laser, Fiber Laser, Laser material processing, Laser applications in nuclear field</i>	
Research Profile	<i>His research interest includes high power CW and pulsed solid state lasers, particularly Nd:YAG and fiber lasers for material processing applications. He is engaged in applied research on high power Yb-doped, Er-doped and Tm-doped CW and pulsed fiber lasers for different applications. He has developed several high power CW and pulsed Nd:YAG lasers for industrial and nuclear field applications. He is also involved in research activity on novel laser material processing techniques for applications in industry and nuclear field. He has published more than 50 Journal and 160 conference papers.</i>	
Ten Selected Recent Publications		
1.	Usha Chakravarty, Avdhesh Kumar, Antony Kuruvilla, Aswin Asok, R.K. Jain, Rajpal Singh, Blacius Ekka, B.N. Upadhyaya, K.S. Bindra, "Thulium-doped all-fiber laser oscillator with more than 100 W of output power at 1940 nm and study of self-pulsing behavior", Optics & Laser Technology 164, 109452 (2023).	
2.	V. Bhardwaj, A. K. Rai, B. N. Upadhyaya, R. Singh, S. K. Rai, and K. S. Bindra, "Study on the Microstructural Evolution and Mechanical Strength in Pulsed Laser Welding of Zr-2.5 wt.%Nb Alloy", Journal of Nuclear Materials, 564, 153685 (2022).	
3.	Vijay Bhardwaj, B. N. Upadhyaya and K. S. Bindra, "A mathematical model to study the keyhole formation in pulsed Nd:YAG laser welding of SS 316L material and its experimental verification", Journal of Laser Applications 34, 032010 (2022).	
4.	Suman Chatterjee, Siba Sankar Mahapatra, Vijay Bharadwaj, Brahma N. Upadhyaya, Khushvinder S. Bindra, "Prediction of quality characteristics of laser drilled holes using artificial intelligence techniques", Engineering with Computers, 37, 1181 (2021).	
5.	R. K. Gupta, V. K. Bhardwaj, R. K. Jain, B. N. Upadhyaya, P. Ganesh, K. S. Bindra & R. Kaul, "Rejuvenation of Inside Surface of Intergranular Corrosion-Damaged Type 304 Stainless Steel Tube through Laser Surface Melting", Journal of Materials Engineering and Performance, 29, 1600 (2020).	



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6.	S. Chatterjee, S.S. Mahapatra, V. Bharadwaj, B. N. Upadhyaya, and K.S. Bindra, "Estimation of Quality Characteristics of Pulsed Nd:YAG Fibre Laser Welded Thin Sheet Ti6Al4V", Lasers in Eng., 46, 111–134 (2020).
7.	Suman Chatterjee, Siba Sankar Mahapatra, Vijay Bharadwaj, Brahma N. Upadhyaya , K. S. Bindra, "Comparative Study of Quality Characteristics of Weldments in Laser Fabrication of AISI 316 and Ti6Al4V using Fiber Nd:YAG Laser", Lasers in Engineering, 47, 133 (2020).
8.	Usha Chakravarty, Srikanth Gurrarn, Antony Kuruvilla, B. N. Upadhyaya, K. S. Bindra, "Short pulse generation in active Q-switched Yb-doped all fibre laser and its amplification", Optics and Laser Technology 109, 186 (2019).
9.	Ram Kishor Gupta, B. Anandkumar, Ambar Choubey, R. P. George, P. Ganesh, B. N. Upadhyaya, John Philip, K. S. Bindra, R. Kaul, "Antibacterial and Corrosion Studies on Nanosecond Pulse Laser Textured 304 L Stainless Steel Surfaces", Lasers in Manufacturing and Materials Processing, 6, 332 (2019).
10.	Suman Chatterjee, Siba Sankar Mahapatra, Vijay Bharadwaj, Brahma N. Upadhyaya, Khushvinder S. Bindra, Joji Thomas, "Parametric appraisal of mechanical and metallurgical behavior of butt welded joints using pulsed Nd:YAG laser on thin sheets of AISI 316", Optics and Laser Technology 117, 186 (2019).