



# St. Xavier's College

Dr. Camil Bulcke Path, Ranchi

## Faculty Profile

<b>Name of Faculty Member</b>	:	<b>Dr. Ravi Kumar Bommali</b>
Gender	:	Male
Email ID	:	ravibommali06@gmail.com
Name of Department	:	Department of Physics
Designation	:	Assistant Professor
Level of Teaching	:	Undergraduate
Academic Qualification	:	M.Sc., Ph.D.
Total Teaching Experience	:	5 Years and 8 Months
UGC NET/SET Qualified	:	Yes

### **Research Papers Published:**

- 1) H Gupta, RK Bommali, S Ghosh, H Srivastava, A Srivastava, P Srivastava, **"Correlation between changes in nanoscale structural and optical properties upon swift heavy ion irradiation of SiN<sub>x</sub> thin films"**, *Journal of Applied Physics*. 3 (2021) 035108.
- 2) H. Gupta O. Plantevin R. K. Bommali Santanu Ghosh Pankaj Srivastava, **"A Study of Temperature-Dependent Photoluminescence from As-Deposited and Heavy-Ion-Irradiated Plasma-Enhanced Chemical Vapor Deposition-Grown Si-Rich a-SiN<sub>x</sub>: H Thin Films"**, *Phys. Status Solidi B* (2020), 1900378.
- 3) R. K. Bommali *et al.* **"Angle dependent localized surface plasmon resonance from silver nanoparticles embedded in SiO<sub>2</sub> thin film"**, *Journal of Applied Physics*. 124 (2018) 063107.
- 4) Alejandro F. Braña, Harsh Gupta, R. K. Bommali *et al.* **"Enhancing efficiency of c-Si solar cell by coating nano structured silicon rich silicon nitride films Thin Solid Films"** 662 (2018)21.

- 5) R. K. Bommali et al. "**Hydrogen loss and its improved retention in hydrogen plasma treated a-SiNx:H films: ERDA study with 100 MeV Ag7+ ions**", *Nuclear Instruments and Methods in Physics Research Section B* 423 (2018)16-21
- 6) Harsh Gupta, RK Bommali et al. "**Stabilization of Si rich nitride phase by swift heavy ion irradiation in non-stoichiometric a-SiNx: H thin films**", *Nuclear Instruments and Methods in Physics Research Section B* 410 (2017) 164-170
- 7) R. K. Bommali, S. Ghosh and P. Srivastava "**Evolution of a dense interlayer in a-SiNx:H thin films under 100 MeV Ni7+ ion irradiation**", *AIP Conference Proceedings* 1832 (2017) 080088
- 8) Vinod Parmar, Pawan Kumar Kanaujia, R.K.Bommali, G. Vijaya Prakash "**Efficient Surface Enhanced Raman Scattering substrates from femtosecond laser based fabrication**", *Optical Materials* 72 (2017) 86-90
- 9) V Parmar, PK Kanaujia, RK Bommali, GV Prakash "**Femtosecond Laser Based Fabrication of Nanostructured Silicon**" International Conference on Fibre Optics and Photonics, W3A. 91, (2016)
- 10) R. K. Bommali et al., "**Swift heavy ion irradiation induced microstructural modification and evolution of photoluminescence from Si rich a-SiNx:H**" *Mater. Res. Express* 2 (2015) 046204
- 11) R. K. Bommali et al., "**Narrow band Photocurrent response from partially phase separated a-SiNx:H thin films**", *Journal of Applied Physics*. 116 (2014) 113501.
- 12) R. K. Bommali et al., "**Hydrogen plasma induced modification of photoluminescence from a-SiNx:H thin films**", *Journal of Applied Physics*. 115 (2014) 053525.
- 13) R. K. Bommali et al., "**Study of Growth Kinetics and Depth Resolved Composition of a-SiNx:H Thin Films by Resonant Soft X-Ray Reflectivity at the Si L2,3-Edge**", *Applied Surface Science*. 305 (2014)173.
- 14) R. K. Bommali et al., "**Excitation dependent photoluminescence study of Si-rich a-SiNx:H thin films**", *Journal of Applied Physics*. 112 (2012)123518.
- 15) R. K. Bommali et al., "**Growth and Tailoring of Physical Properties of Si Quantum Dots in a-SiNx:H Matrix**", *Energy Procedia*. 41 (2013) 50.

#### **Participation in UGC-HRDC Course/FDP/OC/RC:**

- 1) Completed the 17<sup>th</sup> **Faculty Induction Programme**, conducted by HRDC Ranchi in online mode between, 4<sup>th</sup> -31<sup>st</sup> August 2023

**Seminar/Conference attended/Paper Presented (National/International):**

- 1) **INUP-i2i** familiarization workshop on **Nanofabrication and Characterization**, June 28<sup>th</sup> -30<sup>th</sup> 2023, Conducted by IIT Kharagpur in online mode.
- 2) R K Bommali et al. "**Silver implanted silicon oxide and nitride thin films with tunable plasmonic properties**" **ICNIB-2021**, Institute of Physics Bhubaneswar 5th to 8th October 2021 (**Flash Presentation**).
- 3) Workshop on **Evidence based teaching and learning strategies in higher education**, between July 13<sup>th</sup> – 15<sup>th</sup> conducted by CREATES, IISER Bhopal.
- 4) R K Bommali et al "**Near-surface incorporation of Silver ions in silicon oxide/nitride dielectrics for tunable plasmonic properties**" **EMSI-2018** 18th to 20th July 2018 (**Poster**).
- 5) R K Bommali et al., "**Near-surface incorporation of Silver ions in silicon oxide/nitride dielectrics for tunable plasmonic properties**" **ICMAT-2017, Singapore** 18th to 24th June 2017 (**Poster**).
- 6) R K Bommali et al., "**Tunable Opto-electrical properties from partially phase separated a-SiNx:H thin films**" **ETA FM-2016: Emerging trends in Advanced Functional Materials**, Institute of Physics Bhubaneswar, 18th to 21st Jan 2016 (**Poster**).
- 7) R K Bommali et al., "**Slow and fast diffusion processes in a-SiNx:H thin films during MeV Ag ion irradiation**", **Joint ICTP-IAEA Advanced Workshop on High Sensitivity 2D & 3D Characterisation and Imaging with Ion Beams**, ICTP, Trieste, Italy 25th to 30th Sept 2016 ICTP.
- 8) R K Bommali et al., "**UV dominated photoresponse from substoichiometric PECVD Silicon Nitride films**" **International Conference on Solar Energy Photovoltaic- Bhubaneswar** 17th – 19th Dec 2016 (**Poster**).
- 9) R K Bommali et al. , "**Evolution of a dense interlayer in a-SiNx:H thin films under 100 MeV Ni<sup>7+</sup> ion irradiation**" **DAE- Solid State Physics Symposium** 26th to 30th Dec 2016 KIIT University Bhubaneswar (**Poster**).
- 10) R K Bommali et al., "**Growth & Modification of Si rich Silicon Nitride for Solar cell applications**" group progress reappraisal at the 3rd **IAEA Coordinated Research** for CRP-F12024 meeting held in **Pretoria, South Africa** 13th to 17th April 2015. (**Oral**).
- 11) R. K. Bommali et al., "**Tunable opto-electrical properties from partially phase separated a-SiNx:H thin films**" **ICOOPMA-2014: International Conference on Optical, Optoelectronic and Photonic Materials and Applications**, **University of Leeds, Leeds UK** 27th July -1st August. (**Oral**).

- 12) R. K. Bommali et al., "**Swift Heavy Ion Irradiation induced modification in Si rich a-SiN<sub>x</sub>:H thin films**", **ICNIB-2013**: International Conference on Nano-structuring by Ion Beams, Rajasthan Univeristy, Jaipur, India (**Best Poster**).
- 13) R. K. Bommali et al., "**Si Rich Silicon Nitride: A Material with Tunable Opto-electrical properties**", **IUMRS-ICA 2013**: International Union of Materials Research Society of India-International conference of Asia, IISc Bangalore, India 16th-20th December 2013. (**Oral**).
- 14) R. K. Bommali et al. "**Growth and Tailoring of physical properties of Si-QDs in a-SiN<sub>x</sub>:H films**", Energy-2012 International workshop on the modification and analysis of materials for future energy sources, Autonoma de **Madrid, Spain** 17th to 20th September 2012. (**Oral**).

**Any Special Award/Achievement:**

- 1) **National Postdoctoral Fellow** (DST-SERB India) (July 2017-June2018) at the Institute of Physics Bhubaneswar, Odisha, India.
- 2) **Additional Scientific Investigator (2012 to April-2015)** in the project titled, "Si quantum dots on Silicon nitride as anti-reflection coatings of third generation solar cell: role of hydrogen". This project was funded by the *IAEA Coordinated Research Project- F12024*; aimed at promoting the use of ion beams for research and fomenting collaborations between various member nations.

[Dr. Ravi Kumar Bommali]