

# Dr. Ajay Roy

Assistant Professor  
Department of Physics  
Ramnagar College  
Depal, Purba Medinipur, 721453



Nationality- Indian  
DOB: 30th Dec, 1990  
Ph. No: +919143543323  
Email- [royajay100@gmail.com](mailto:royajay100@gmail.com)

## Permanent Address:

Village- Nabal gram (beside 23 no road)  
P.O- Sultangacha, P.S-Polba, District – Hooghly  
Pin – 712 148, West Bengal, India.

## Education

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### Doctor of Philosophy in science | Indian Association for the Cultivation of Science

Registration Jadavpur University

2014 – 2021

**Thesis Title** Synthesis and Characterization of Carbon-Based Nano-structured Thin Films

**Thesis Advisor** Prof. Debajyoti Das

### Master of Science | Indian Institute of Technology, Bombay

2012 – 2014

Subject- Physics, Special Papers (Advance Statistical Mechanics, Theoretical Condensed Matter Physics)

### Bachelor of Science | Hooghly Mohsin College, Burdwan University

2009 – 2012

Major- Physics (Hons.), Mathematics (General), Chemistry(General)

### Higher Secondary | Bagati Ramgopal Ghosh High School, WBCHSE

2007 – 2009

Subjects- Bengali, English, Mathematics, Physics, Chemistry, Biology, Environmental Science

### Secondary | Hooghly Colligate School, WBBSE

2007

Subjects- Bengali, English, Mathematics, Physical Science, Life Science, History, Geography



## Achievements

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- Awarded Merit-cum-means scholarship in 2010.
- Ranked 150 in Joint Admission Test for M.Sc. in IITs (JAM) in 2012.
- Ranked 355 in Joint Entrance Screening Test (JEST) in 2014.
- Ranked 246 in Graduate Aptitude Test in Engineering (GATE) in 2014.
- Ranked in CSIR UGC NET examination: JRF-177 (June 2014).

## Summary of Skills

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### Major Instrumental and Analytical Techniques Known

- Microwave Plasma Enhanced Chemical Vapor Deposition system (MW-PECVD): Thin film growth, Diamond synthesis
- FE-SEM –TEM and XRD: Structural study analysis
- UV-Vis spectrometer: Absorption and Transmission study
- Raman spectroscopy: Analysis of the structural morphology
- Dynamic light scattering (DLS): Size measurement of the nanoparticles

## Publications

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1. A. Roy and D. Das, Low temperature growth of carbon nanotubes with aligned multiwall by microwave plasma-CVD, AIP Conference Proceedings 1832 (2017) 080028.
2. A. Roy and D. Das, Low temperature growth of carbon nanotubes by microwave plasma stimulated by CO<sub>2</sub> as weak oxidant and guided by shadow masking, Diamond & Related mat. 88 (2018) 204-214.
3. A. Roy and D. Das, Growth of Multiwall Carbon Nanotubes at 300°C Using CO<sub>2</sub> as a Weak Oxidant to (CH<sub>4</sub>+H<sub>2</sub>) Microwave Plasma, Materials Today: Proceedings 18 (2019) 1411–1415.
4. D. Das and A. Roy, Synthesis of diameter controlled multiwall carbon nanotubes by microwave plasma CVD on low-temperature and chemically processed Fe nanoparticle catalysts, Applied Surface Science 515 (2020) 146043.
5. A. Roy and D. Das, Synthesis of single-walled, bamboo shaped, Y-junction carbon nanotube by microwave plasma CVD on low-temperature and chemically processed catalysts, Journal of Physics and Chemistry of Solids 152 (2021) 10997.
6. A. Roy and D. Das, Effect of HF wet etching and H<sub>2</sub>-plasma polishing on the low temperature growth of carbon nanotubes on stainless steel substrates, Journal of Physics and Chemistry of Solids 160 (2022) 110307.
7. D. Das and A. Roy, Growth of nanostructured diamond films on glass substrates by low-temperature microwave plasma-enhanced chemical vapor deposition for applications in nanotribology. ACS Appl. Nano Mater. 2022, 5, 3558–3571

## Conferences and Seminar

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- Attended DAE Solid State Physics Symposium 2016 organized by KIT, Bhubaneswar held on 26-30 Dec, 2016
- Attended International Conference on Nanotechnology: Ideas, Innovation & Initiatives (ICN:2017) organized by IIT Roorkey, held on 6-8<sup>th</sup> Dec, 2017.