Teacher's Profile

General Information

Name: **Dr. Mahua Chakraborty**

Designation: Assistant Professor & Head

Department: Electronic Science

Contact information:

Email: mahuachak@gmail.com; cmahua99@gmail.com

Specialization: Semiconductor, solar cell

Academic Qualification:

- **Ph.D** from Jadavpur University in 2008

  Title of the thesis: "Formation, Characterization and Modeling of Quasi Monocrystalline Porous Silicon as Solar Cell Material"

- **M.Tech** in Energy Science & Technology from Jadavpur University with First Class
- **M.Sc** in Electronics from Jadavpur University with First Class
- **B.Sc** in Physics from St. Xavier's College, Kolkata (Calcutta University) with First Class

Additional Qualification:

- Qualified Graduate Aptitude Test in Engineering, GATE.
- Qualified National Eligibility Test, NET (LS).

Professional Information

Joined Sarsuna College on 23/09/2016, as Assistant Professor, in the Department of Electronic Science.

Professional activities in the College till date:

• Teaching theory and practical under Under-Graduate general courses

• Carrying out administrative activities in the Department of Electronic Science as Head since 23.09.2016 till date.

• Performing duties as examiners of different University examinations of UG general courses.

• Implementing activities associated with the academic, administrative and cultural spheres of the College.

Previous Experiences:

- Lecturer, Department of Electronics, Gokhale Memorial Girls' College, Kolkata, India. [Sep 2006 - Oct 2007] for B. Sc. (Hons.) courses.
- Lecturer, Department of Electronics and Communication Engineering, Techno India, Saltlake, Kolkata, India [2007 -2009] for B. Tech & M. Tech courses.
- Assistant Professor, Basic Electronics Engineering Department, Techno India University [Jan 2015-22.09.2016]

Awards/Fellowship/Scholarship:

- **Young Scientist Award** for best oral presentation at Young Scientists' Colloquium-2008 organized by Materials Research Society of India (MRSI), Kolkata chapter (July, 2008).
- **Best Poster Award** at 12^{th} International Workshop on Physics of semiconductor devices (IWPSD), IIT Chennai, India (Dec. 2003).
- **Senior Research Fellowship** (National Renewable Energy Fellowship) from Ministry of Non-conventional Energy Sources (M.N.E.S.), Govt. of India (2002-06).

Research Publications

Journal Publications:

1. **M. Banerjee**, S.K. Dutta, U. Gangopadhyay, D. Majumdar and H. Saha, "Modeling and simulation of layer transferred thin silicon solar cell with Quasi Monocrystalline porous silicon (QMPS) as active layer", **Solid State Electronics**, 49 (2005)1282-1291.

2. **M. Banerjee**, S.K. Dutta and H. Saha, "Enhanced optical absorption in thin silicon layer with nano voids", **Nanotechnology**,16(2005) 1542-1547.

3. **M. Banerjee**, S.K. Dutta and H. Saha, "Carrier Density in Thin Silicon Layer with nano voids", **Nanotechnolgy**,17(2006) 163-169.

4. N. Mukherjee,P. Bhattacharyya**, M. Banerjee,** A. Mondal, Robert T T Gettens, P.K. Ghosh, H. Saha, "Galvanic deposition of Nanocrystalline ZnO thin films from a ZnO-$Zn(OH)_2$ mixed phase precursor on p-Si substrate" **Nanotechnology,**17(2006) 2665-2669.

5. U. Gangopadhyay, K. H. Kim, S. K. Dhungel, U. Manna, P.K. Basu, **M. Banerjee**, H. Saha, J.Yi, "A novel low-cost texturization method for large-area commercial monocrystalline silicon solar cells", **Solar Energy Materials and Solar Cells**, 90(2006)3557-3567.

6. **M. Banerjee**, E. Bontempi, A.K.Tyagi, S. Basu and H. Saha, "Surface Analysis of Thermally Annealed Porous Silicon", **Applied Surface Science** 254 (2008) 1837-1841.

7. **M. Banerjee**, S. Basu, H. Saha, "Metal contact, resistivity and Hall measurement studies of a quasi monocrystalline porous silicon layer vis-à-vis porous silicon", **Semicoductor Science and Technology** 23 (2008) 075014.

8. **M. Banerjee**, E. Bontempi, S. Bhattacharya, S. Maji, S. Basu, H. Saha, "Thermal annealing of porous silicon to develop a quasi monocrystalline structure", **Journal of Materials Science: Materials in Electronics** 20(2009) 305.

9. **Mahua Chakraborty**, Amit Banerjee, Debajyoti Das, "Spectroscopic studies on nanocrystalline silicon thin films prepared from H_2-diluted SiH_4-plasma in inductively coupled low pressure RF PECVD", **Physica E** 61(2014) 95.

10. **M. Chakraborty**, "Progress of Graphene/Silicon Solar Cells- Present Status &Future Prospect", **Journal of Semiconductor Devices and Circuits** 7(3) (2020) 19.

11. **M. Chakraborty**, "Graphene for Next Generation Green Electronics: A Sustainable Future", **Journal of Energy, Environment & Carbon Credits** 12(3) (2022) 2249.

Conference Papers & Presentations:

1. **M. Banerjee**, D. Majumdar, S.K. Dutta, S.M. Hossain and H. Saha, Proc. of 12th International Workshop on Physics of semiconductor devices, IIT Chennai, India, Dec. 16-20, 2003) pp. 947-949 **(Best Poster Award).**

2. **M. Banerjee**, D. Majumder, S.K. Datta and H. Saha, Proc. of CODIS-2004, Jadavpur University, Kolkata, pp 342-345.

3. **M. Banerjee**, D. Majumdar, U. Gangopadhyay, S.K. Dutta and H. Saha, Tech. Digest (Vol.1) of 14th International Photovoltaic Science and Engineering conference (PVSEC-14), 26-30 January 2004 (Bangkok, Thailand) pp. 331-332.

4. **M. Banerjee**, P. Mandal, S.K. Dutta, H. Saha, National Seminar on Renewable Energy Technologies: Innovations & Market Penetration, 8-9th October, 2004 (IACS, Kolkata) 15.

5. S.Chakraborty, L. Das, **M. Banerjee**, S. K. Dutta & H. Saha, International Symposium on Advanced Materials and Processing, 6th- 8th Dec., 2004,(IIT Kharagpur, India).

6. **M. Banerjee**, S.K.Dutta & H. Saha, National seminar on Nano-technology, 21st January,2005,(Jadavpur University, Kolkata).

7. U. Gangopadhyay, **M. Banerjee**, S.K.Dhungel, K.Kim, U.Manna, S.K. Dutta, H.Saha, J. Yi, 20th European Photovoltaic Solar Energy Conference, Barcelona, Spain,6-10th June, 2005, pp 390-393.

8. **M. Banerjee**, S.K. Datta, H. Saha, International Conference on MEMS and Semiconductor Nanotechnology, 20-22 December, 2005 (IIT Kharagpur, India)(cd:\pdf\NANO\TN2\TN2_6).

Book Chapter Authored:

1. **Mahua Chakraborty (Banerjee)**, Sukumar Basu, Hiranmay Saha, "Quasi Monocrystalline Porous Silicon (QMPS) – A Potential Material for Optoelectronic and Photovoltaic Applications" in ***Nanoporous Materials: Types, Properties and Uses***, edited by Samuel B. Jenkins, Nova Science Publishers USA, 2010, 261-272.