

**PROFILE OF SCHOOL OF MATERIALS SCIENCE & TECHNOLOGY
METALLURGICAL & MATERIAL ENGINEERING BUILDING
JADAVPUR UNIVERSITY-700032**

Director : Prof.S.Mukherjee

Jt. Director : Dr.K.K.Chattopadhyay

Name of School	School of Materials Science & Technology
Year of Establishment	1988
No. of Teachers	2(contractual), 18(Hon.),6(visiting)
No. of Administrative Staff	Nil Part time Store keeper
No. of Technical Staff	One +one helper
No. of ongoing projects	Seven(Sponsored),16 (M.Tech)
Ratio of Students to Teachers	0.75
No. of books in Dept. Library	200+
No. of Journals (Digital)	Most of the related journals are available in digital library
No. of Computers	16
Research Projects completed	Four(Sponsored),15 (M.Tech)
No. of International Research Collaboration	Three
Success Rate of Students Last Year	80%
Annual Budget	Rs. Four Lakh (Working Expense)
Faculty Who Have Attended National/International Seminars	All
No. of National /International Seminar organized	Four: One International& National-Three
No. of Refresher course conducted	Two
Awards & Recognition received by Faculty	N.A.
Publication	125 (in last three years)
Departmental Publications	Two
No of Students passed in Net/Slet	NA
Significant Achievements	First AICTE approved M.Tech. course in NST. World class research laboratory facility created.

ANNEXURE

1. Faculty Profile:

AICTE approved M.Tech. programme started from 2004-05 Session. Following teachers are involved for the M.Tech course on Nano Science & Technology

Sl.No	Name	Department
1	Prof.M.K.Mitra	Met Engineering
2.	Prof. S.Mukherjee	Met. Engineering
3.	Prof. Hiranmoy Saha	ETCE
4.	Dr. Subir Sarkar	ETCE
5.	Prof. Chandan Sarkar	Do
6.	Dr.Chayanica Basu	Do
7.	Dr.Rajib Dey	Met. Engg.
8.	Prof.P.J.Roychoudhuri	Guest Faculty
9.	Dr. Swarnendu Sen	Mech. Engg.
10.	Dr.Partha Chatterjee	Guest Faculty
11.	Prof.Amitava Basumallick	Do
12.	Prof. Gopes Chandra Das	Met. Engg
13.	Prof. Prodyot Mitra	Do
15.	Dr. Kalyan Kumar Chattopadhaya	Physics
16.	Dr.Amarnath Sen	Guest Faculty
17.	Dr.A.K.Ghoshal	Do
18.	Dr. Niladri Chakraborty	Power Engineering
19.	Dr. Rajib Banerjee	Instrumentation Engineering
20.	Prof. Subhas Chandra Bhattacharya	Chemistry
21.	Dr. Md. Ali	Do
22.	Mrs. Mahua Ghosh Chaudhuri (Contractual Lecturer)	School of Mat. Science
23.	Mr. Souradip Malkhandi (Contractual Lecturer)	Do

24.	Dr Joyashree Ghose	Visiting
25.	Prof.S.K.Nandi	Visiting
26.	Prof. R.Joarder	Visiting

2. Student Profile:

2004-06 Session	2005-07	2006-08
No. of Boys- 14	13	11
No. of Girls - 04	04	05

East-16, West-2

East-12, West-2, North-3

East-13, West-2, North-1

3. Changes made in course: Under Consideration

4. Success Rate: 80%

Drop out: 10%

5. Library - Well displayed library with sufficient text & references

Computers - Separate computer facility with internet connection

Laboratories - Well developed sophisticated laboratory facility available.

The following equipment for characterization have already been procured and installed.

- | | | |
|--------|--|------------|
| (i) | EDS and Software attachment to SEM for X-ray elemental mapping | Installed. |
| (ii) | Photoluminescence System | Installed. |
| (iii) | UV-VIS Spectrophotometer | Installed. |
| (iv) | Fluorimeter | Installed. |
| (v) | Spectroscopic Ellipsometer | Installed. |
| (vi) | DTA-TGA with DSC attachment | Installed. |
| (vii) | Microwave generator | Procured. |
| (viii) | AFM | Installed. |
| (ix) | Optical Microscope with CCD | Installed. |
| (x) | High temperature Furnace 1600-1700 ⁰ C | Installed. |
| (xi) | Gas Chromatograph | Installed. |
| (xii) | Micro-hardness Tester | Installed. |
| (xiii) | Cryo setup with Instron machine | Installed. |
| (xiv) | Corrosion set up for low temp atm. Control system | Installed. |
| (xv) | 200 KV HRTransmission Electron Microscope (PC Control) | Installed. |

(xvi) XPS – UHV – Analysis System

Installed.

6. Enhancement of the learning resources:

Library up gradation, Digital library, Networking facility, Regular seminar, Conferences, Collaborative research project were organized/conducted.

7. Teaching method:

Power point presentation, Practical classes, National institute collaborative project, Visiting lecture etc.

8. Participation of teachers in counseling of students:

Regular interaction meets with the students were held.

9. Faculty development programme:

Refresher course for college teachers were organized on-

- i) Nanoscience & Technology
- ii) Instrumental Analysis Technique.

Training programme on-

- i) AFM instrumentation & Characterization
- ii) HRTEM
- iii) SEM-EDX
- iv) DTA-TGA etc.

10. Participation in other academic activities:

Organizing National & International Conference in the field of -
Nanoscience&Technology.

Participation in P. G. Diploma programme on
INSTUMENTAL ANALYSIS conducted by ADULT EDUCATION CENTER.
Participation of faculty members from Power Engg., Mech. Engg. Printing
Engg. Instrumentation Engg. Thin film Laboratory Physics dept. Metallurgical
Engg. Dept.

Refresher course of UGC Academic Staff College

Members are actively participating in PROFESSIONAL BODIES meet
organized by Materials Research Society of India, Indian Institute of Metals,
Institute of Engineers.

11. National Collaboration with following institutes :

- a) Indian Association for Cultivation of Science
- b) Saha Institute of Nuclear Science
- c) Variable Energy Cyclotron Center
- d) Central Glass & Ceramic Research Center
- e) S.N.Bose National Center for Basic Sciences

International Collaboration with:

- a).Verginia Tech University USA
- b) York University Canada
- c) Magdeburg University Germany

Collaboration is in the field of Teaching & Research for PhD & M.Tech program. Ph.D & post doctoral level collaboration with: NML, RDCIS-SAIL, OCL, CG&CRI, Govt. College of CERAMIC TECHNOLOGY, Beherampur Girls College, Bankim Sardar College

12. Thrust Area of Research:

Nanoscience & Technology

13. Ongoing Sponsored project:

Annexure-A

14. Publications:

Annexure-B

15. Participation in extension activity:

Faculty members are actively participating extension activity in various programme of the university such as:

- a) DRS-DSA-ASIST program of Metallurgical & Material Engineering,
- b) DST program Metallurgical & Physics dept
- c) Adult Continuing Center activity
- d) Dept of Instrumentation Science
- e) Center for Nanoscience programme under UGC Potential for Excellence
- f) TEQIP programme
- g) MHRD programme
- h) AICTE programme

16. Continuous Student Assessment:

Students are assessed through interaction meet in seminar class, tutorial work by term paper & regular laboratory evaluation test programme. Total examination system is based on semester examination.

17. Placement Record:

Placement	2004-06	2005-07	2006-08
Industry	03	04	10
Research	05	08	05
Teaching	07	03	-
Other-Commercial etc	01	01	-

18. Significant achievement:

- a) Large number of paper published in National & International journals.
- b) Set up highly sophisticated laboratory facilities for Characterization of Nanomaterials.
- c) Collaborative research has been successfully carried out with various research & industrial organization.
- d) Organized International & National Conference
- e) Refresher course in Nanoscience & Technology & Instrumental Techniques
- f) Training programme for research scholar on AFM, SEM-EDX, HRTEM, DTA-TGA.

19. Not applicable

20. Action plan

Augmentation & Upgradation of existing Laboratory to make state of the art of Nanoscience & Technology under DST –Nanoinitiative

To introduce undergraduate programme in Nanoscience & Technology

To initiate research in nanobiology & to develop nano base sensor & its possible commercial exploitation.

To develop carbide base hard facing nanomaterials

21. Any other highlights:

In UGC report on the UNIVERSITY WITH POTENTIAL FOR EXCELLENCE scheme performance of the Nanoscience & Technology has been highly praised.

ANNEXURE - A

Sponsored Project

1. Stress relieved and SP³ rich diamond like carbon films produced by D.C. plasma decomposition of acetylene, UGC – Completed.
2. Synthesis and characterization of some II-VI semiconductor films in nano structured - DRDO.
3. In situ synthesis of Si₃N₄ in silica gel matrix. - CSIR.
4. Optimization of process parameters for Ni-SiO₂ nano composite - UGC.
5. Optimization of process parameters for NiCl₂ to Ni in gel matrix nano composite. - UGC.
6. Synthesis & Characterization of transparent p type semiconductor based on Copper-Aluminum oxide based material for transparent or invisible electronics – DST.
7. PG Teaching programme in Nanoscience & Technology DST Nanomission
8. Investigation of Lubricating properties of Automotive oil & Grease with the addition of Carbon nanotubes and metal oxide nano particles B&L Co.
- *

ANNEXURE -B

List of Publication (Partial List): Papers Published in Referred Journals :

In 2004 :

1. Spectroscopic Studies on the Interaction of Safranin T with Micellar and Reverse Micellar Solutions of Igepal in Chloroform, S.K. Ghosh and **S.C. Bhattacharya**, J.Mol. Liquids, 106/1, **2004**, 97.
2. Quenching of Fluorescence of 1-Hydroxypyrene 3,6,8 Trisulphonate (HPTS) by Cu²⁺, Co²⁺, Ni²⁺, I⁻ and Cetylpyridinium (Cp⁺) Ions in Water/AOT/Heptane Microemulsion, S. Biswas, **S.C. Bhattacharya** and S.P. Moulik, J. Colloid Interface Sci., 271, **2004**, 157.
3. Role of Non Ionic Micelles of Tween in Photovoltage Generation using Fluorescein Dye, J. K. Ghosh, S.K. Ghosh and **S.C. Bhattacharya**, J.Oleo. Sciences, 53, **2004**, 73.
4. Characterisation of Micelles of Polyoxyethylene Nonyl Phenol (Igepal) and its Complexation with 3,7 diamino 2-8 dimethyl 5 phenyl phenazinium chloride, S.K. Ghosh, P.K. Khatua and **S.C. Bhattacharya**, J. Colloid Interface Sci. 275, **2004**, 623.
5. Spectroscopic Studies of Complexation of Safranin T and Safranin O with [60] and [70] Fullerene and other Electron Acceptors, S. Bhattacharya, **S.C. Bhattacharya** and M. Banerjee, J. Phys. Chem. A, 108, **2004**, 10783.
6. Physicochemical Characteristics of Reverse Micelle of Igepal in Different Organic Solvents, S.K. Ghosh, P. K. Khatua and **S.C. Bhattacharya**, J. Colloid Interface Sci. 279, **2004**, 523.

7. Micellization of Nonionic Surfactants: Tweens – A Review, S.C. Bhattacharya, R.M. Palepu, *J. Surf. Sci. Technology*, 20, **2004**, 1.
8. Interaction of 3, 7-diamino-2, 8-dimethyl-5-phenyl phenazinium chloride with Model Biological Membrane and Reverse Micelles of Lipid, S.K. Ghosh and **S.C. Bhattacharya**, *Chem. Phys. Lipids*. 131, **2004**, 151.
9. Characterization of Binary Surfactant Mixtures (Cetylpiperidinium Chloride and Tween 60) in an Aqueous Medium, P.K. Khatua, S.K. Ghosh, **S.C. Bhattacharya**. *J. Dispersion Sci. Tech.* 25, **2004**, 1.
10. Synthesis of nanoparticles of CuI, CuCrO₄ and CuS in Water/AOT/Cyclohexanone and Cater/TX-100 + 1-propanol/cyclohexanone Reverse Microemulsion S.Biswas, S.K. Hait, **S.C. Bhattacharya** and S.P. Moulik, *J. Dispersion Sci. Tech.* 25, **2004**, 801.
11. Solvent Extraction of Ga with O₂ & N₂ Donor Ligands and Physicochemical Leaching of the Extraction. D.K. Mandal, S. Mukherjee, B. Bhattacharya, *Journal of Ultra Scientists*, 16, 2004, 51-56.
12. Synthesis of Ni / NiAl₂O₄ Silica Nanocomposites Alumina, S. Mallick, G.C. Das, S. Mukherjee, M.K. Mitra, **ICNSCA – 2004**, p- 325.
13. Synthesis of Ni – SiO₂ Nanocomposites by Isothermal & Non-isothermal Reduction Technique. **ICNSASCA – 2004**, p-373.
14. **S. Koner**, S. Saha, T. Mallah and K-I. Okamoto, Unprecedented Low Cu-N(azide)-Cu Angles in End-on Double Azido Bridged Copper(II) Complex, *Inorg. Chem.* **43**, 840 (2004).
15. P. K. Saha and **S. Koner**, Novel chromotropism and catalytic activities of Cu(Schiff-base) moiety immobilized in Y-zeolite matrix, *Inorg. Chem. Commun.*, **7**, 1164 (2004).
16. S. Saha, D. Mal, **S. Koner**, A. Bhattacharjee, P. Gütllich, S. Mondal, M. Mukherjee and K. Okamoto, Syntheses, Structures and Magnetic Properties of the Azido Adducts of Quadridentate Schiff Base Manganese(III) Complexes, *Polyhedron* **23**, 1811 (2004).
17. P. K. Saha, S. Banerjee, S. Saha, A. K. Mukherjee, S. Sivasanker and **S. Koner**, Immobilization of Metal Complex in Y-zeolite Matrix: Synthesis, X-ray Single Crystal and Catalytic Activities of Copper (Schiff-base)-Y Zeolite Based Hybrid Catalyst, *Bull. Chem. Soc. Jpn.*, **77**, 709 (2004).
18. **S. Koner**, S. Saha, T. Mallah and K-I. Okamoto, End-on double azido bridged copper(II) complex with (N, N, O) Schiff base moiety: Synthesis, structure and magnetic study, *J. Phys. Chem. Solids*, **65**, 697 (2004).

19. Instability dynamics and morphology of thin slipping film, S. Sen et al., **Langmuir**, 20 244-253 (2004)
20. Flame synthesis of completely Graphitic Carbon nanofibers using Metal particles, S. Sen et al., **Nanotechnology**, V-15,264-268, 2004
21. Thermomagnetic Convection in a Square Enclosure Using a Line-Dipole, S. Sen et al., **Journal of Magnetism and Magnetic Materials**; V-271, 63-73, 2004.
22. Synthesis of boron doped diamond films at lower substrate temperature from CH₄+CO₂+H₂ gas mixture and formation of n-Si/p-diamond heterojunction, P. Saha, S. Kundoo, A.N. Banerjee and K.K. Chattopadhyay, **Vacuum**, 72 (2004) p.129-134.
23. Synthesis and characterization of nanocrystalline zincsulphide by wet chemical route, R. Maity, S. Kundoo,, P.K. Ghosh and K.K. Chattopadhyay, **Ind. J. Phys**, 78A (2004)p.121-124.
24. Electrical and optical properties of highly conducting CdO:F thin film deposited by sol-gel dip coating technique, P.K. Ghosh, R. Maity and K.K. Chattopadhyay, **Sol. Eng. Mater. Sol. Cells**, 81 (2004) 279-289.
25. Low-threshold field emission from transparent p-type conducting CuAlO₂ thin film prepared by DC sputtering, A.N. Banerjee and K.K. Chattopadhyay, **Applied Surface Science** 225 (2004) 243 – 249.
26. Poole-Frenkel effect in nanocrystalline SnO₂:F thin films prepared by sol gel dip coating technique, A.N. Banerjee, S. Kundoo and K.K. Chattopadhyay, **Phys. Stat. Solidi (a)** 201 (2004) 983-989.
27. Synthesis and optical characterization of ZnS and ZnS:Mn nanocrystalline thin films by chemical route, R. Maity and K.K. Chattopadhyay, **Nanotechnology** 15 (2004) 812-816.
28. Low macroscopic field emission from ZnO nanofibrous thin film by chemical route, R. Maity, A.N. Banerjee and K.K. Chattopadhyay, **Applied Surface Science** 236 (2004) 231-235.
29. CdS Nanoparticles grown in a polymer matrix by chemical bath deposition, P.K. Ghosh, R. Maity and K.K. Chattopadhyay, **Journal of Nanoscience & Nanotechnology**, 5, (2004) p 1- 6.
30. Electro-optical properties of ZnO:Al thin films produced by sol-gel route, R. Maity, S. Kundoo and K.K. Chattopadhyay, **Ind. J. Phys** 78 (2004) 837 -840.
31. Investigation of tin-incorporated nanocomposite diamond like carbon film, S. Kundoo, P. Saha and K. K. Chattopadhyay, **Ind. J. Phys** 78 (2004) 733- 737.

32. Electron field emission from nitrogen and sulfur doped diamond like carbon films deposited by simple electrochemical route, S. Kundoo, P. Saha and K.K. Chattopadhyay, **Materials Letters** **58** (2004) 3920-3924.
33. Synthesis of tin-incorporated nanocomposite diamond like carbon films by plasma enhanced chemical vapor deposition and their characterization, S. Kundoo, P. Saha and K.K. Chattopadhyay, **J. Vac. Sci. & Tech B** **22** (6) (2004) 2709-2714
34. H. Saha, J. Das and S.M. Hossain, "Porous Silicon: a natural nanostructure for vapour sensing application", **Asian J. Physics** (2004).12,p323
35. T. Islam, Kalyan Kr. Mistry, K. Sengupta, H. Saha," Measurement of gas moisture in the ppm ranges by porous silicon (PS) and porous alumina sensor ", Vol. 16, no. 7 (2004) **Sensors and Materials** 345-356.
36. H. Saha, "Porous Silicon: A natural nanostructured for sensing and photonic application", **Indian J. Physics** 78A (1), 19-25 (2004).

In 2005:

37. Triplet State Interaction of Safranin T with Inorganic Cations in Different Solvents. P. K. Khatua, S. K. Ghosh, S. C. Bera and **S. C. Bhattacharya**, *J. Mol. Struct.* 737, **2005**, 43
38. Spectroscopic Study of Some Photographic Developing Agents in Reverse Micelles of AOT in Heptane. S. Chatterjee, S. Pramanik and **S. C. Bhattacharya**, *J. Mol. Liquids.* 116, **2005**,131.
39. Fluorescence Resonance Energy Transfer From Fluorescein To Safranin T in solutions and in Micellar Medium. S. Chatterjee, S. Nandi and **S. C. Bhattacharya**, *J. of Photochem. Photobiol. A: Chem.*173, **2005**, 221.
40. Spectroscopic Studies of Complexation of p-phenylenediamine with Micelles and Reverse Micelles of Tweens. S. Chatterjee and **S. C. Bhattacharya**, *Chem. Phys. Let.* 407, **2005**, 407.
41. Partitioning of Quencher ion in the micellar micro-environment of Polyoxyethylene nonyl phenol. S.K. Ghosh, P.K. Khatua, J.K. Ghosh and **S. C. Bhattacharya**, *Spectrochimica Acta. A*, 61, **2005**, 395.
42. Distribution of Quencher ions in Ternary System of Igepal / Water / Carbon tetrachloride at Different Water Pool Concentration: A Spectroscopic Study. S. Nandi, S.K. Ghosh, **S. C. Bhattacharya**, *Colloid Surf. A: Phys. Eng. Asp.* 268, **2005**, 118-123.

43. Effect of ethylene glycol on the thermodynamic and micellar properties of Tween 40,60,80. K. Glenn, S. Moore, **S. C. Bhattacharya** and R.M. Palepu, *J. Dis. Sci. & Tech.* 26, **2005**, 79.
44. Self Aggregation of Binary Mixture of SDS and Polymethylene alkyl ethers in aqueous solution. K. Glenn, S. Moore, **S.C. Bhattacharya**, R.M. Palepu, *Coll. & Polym. Sci.* 283, **2005**, 845-853.
45. Dyeing of Wool and Silk with Tea. D.Das, **S. C. Bhattacharya**, S.R.Maulik, *Int. J. Tea Sci.* 4, **2005**, 17.
46. Quenching of Fluorescence of Safranin T by Inorganic Anions in Micellar Medium of Tween. S. Moore, **S. C. Bhattacharya**, R.M. Palepu, *Canadian J. Chemistry*, 83, **2005**, 1-6.
47. 2-(2-Selenocyanato-ethyl)-benzo[de]isoquinoline-1,3-dione synthesis, photophysics and interaction with bovine serum albumin: A spectroscopic approach. S. K. Ghosh, U. Hossen, S. Bhattacharya and S. C. Bhattacharya. **J. of Photochem. Photobiol. B: Bio.** 81, **2005**, 121-128.
48. Role of Sodium Sulfite and β -Cyclodextrin as Preservative of Photographic Developing Agents. S. Chatterjee, S. Nandi and S.C. Bhattacharya, *J. of Photochem. Photobiol. A: Chem* 173, **2005**, 221.
49. Effect of Phase Separation on Fracture Toughness of SiO₂ – B₂O₃ – Na₂O Glass. A. Seal, P. Chakraborty, N.R. Roy, S. Mukherjee, M.K. Mitra, G.C. Das, *Bull. Of Materials Science*, 28, (2005), 457-468.
50. Oxidation Kinetics of MgO – C in air with Varying Ash Content. S.K. Nandy, N.K. Ghosh, G.C. Das, *Adv. In Appl. Ceram.* 104 (6), 2005, 306.
51. **Ganguly, R.**, Zellmer B., and Puri, I.K., “Field-induced Self-assembled Ferrofluid Aggregation in Pulsatile Flow”, *Physics of Fluids*, 17, pp-097104(1-8), 2005.
52. **Ganguly, R.**, Gai, A.P., and Puri I.K., “A Strategy for the Assembly of 3-D Mesoscopic Structures Using a Ferrofluid”, *Physics of Fluids*, 17, pp-57103(1—9), **2005**
53. A. Bhattacharjee, S. Saha, **S. Koner**, V. Ksenofontov, S. Reiman and P. Gülich, Metal-Metal Electron Transfer and Magnetic Interactions in a Mixed-Valance Prussian Blue Analogue, *J. Magn. Magn. Mater.* (in press). DOI information: 10.1016/j.jmmm.2005.09.004
54. S. Saha, **S. Koner**, J-P. Tuchagues, A. K. Boudalis, K-I. Okamoto, S. Banerjee, and D. Mal, Cation-Dependent Nuclearity of the Copper-Azido Moiety: Synthesis, Structure, and Magnetic Study, *Inorg. Chem.* **44**, 6379 (2005).

55. Electrical characterization and Poole-Frenkel effect of sol-gel derived ZnO:Al thin films, R. Maity, S. Kundoo and K.K. Chattopadhyay, **Sol. Eng. Mater and Sol. Cells** **86** (2005) 217-227.
56. Synthesis and characterization of ZnO nano/micro fibrous thin films by catalyst free solution route, R. Maity, S. Das, M.K. Mitra and K.K. Chattopadhyay, **Physica E** **25** (2005) 605-612.
57. Thermoelectric properties and electrical characteristics of sputter-deposited P-CuAlO₂ thin films, A.N. Banerjee, R. Maity, P.K. Ghosh and K.K. Chattopadhyay, **Thin Solid Films** **474** (2005) 261-266.
58. ZnS nanobelts grown in a polymer matrix by chemical bath deposition, P.K.Ghosh, S. Das, M.K. Mitra and K.K. Chattopadhyay, **Nanotechnology** **16** (2005) 107-112..
59. Size dependent optical properties of nanocrystalline p-type transparent conducting CuAlO₂ thin films produced by DC sputtering, A.N. Banerjee and K.K. Chattopadhyay, **Journal of Applied Physics** **97** (2005) 084308.
60. Effect of Excess Oxygen on the Electrical Properties of Transparent P-Type Conducting CuAlO_{2+x} thin films, A. N. Banerjee, C. K. Ghosh and K. K. Chattopadhyay, **Solar Energy Mat. and Sol. Cells** **89** (2005) 75-83.
61. Effect of fluorine doping on semiconductor to metal-like transition and optical properties of cadmium oxide thin films deposited by sol-gel process, P. K. Ghosh, S. Das, S. Kundoo and K. K. Chattopadhyay, **Journal of Sol-Gel Science & Technology**, **34** (2005) 173 – 179.
62. Temperature dependent structural and optical properties of nanocrystalline CdO thin films deposited by sol-gel process, P. K. Ghosh, S. Das and K. K. Chattopadhyay, **Journal of Nanoparticle Research**, **7** (2005) 219 – 225.
63. Effect of mechanical stress on the absorption band tail of cubic boron nitride thin films synthesized by inductively coupled radio frequency plasma chemical vapor deposition, K. K. Chattopadhyay*, P. Saha and S. Kundoo; **Philosophical Magazine Letters**, **85** (2005) 311-323.
64. Electro-Optical Characteristics and Field-Emission Properties of Reactive D. C. Sputtered p-CuAlO_{2+x} Thin Films, A. N. Banerjee, C. K. Ghosh, S. Das, K. K. Chattopadhyay, **PhysicaB Vol 370/1-4** (2005) pp 264-276
65. Recent developments in the emerging field of crystalline P-type transparent conducting oxide thin films, (Review Paper), A. N. Banerjee and , K. K. Chattopadhyay,

Progress in Crystal Growth and Characterization of Materials, 50 (2005) 52-105.

66. 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.

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

In 2006:

68. Spectroscopic studies of interaction of Safranin T with non ionic micelles and mixed micelles, Sujan Chatterjee, **Subhash Ch. Bhattacharya**, Spectrochimica Acta Part A 64, **2006**, 355-362.

69. Quenching of fluorescence of ST by halides and pseudohalides in mixed micellar media, P.k. Khatua, Sujit Ghosh & **S.C. Bhattacharya**, J. Mol. Liq. 124, **2006**, 45-50.

70. Mixed Micellisation Of Ionic And Nonionic Surfactants In Aqueous Solution, S. Chatterjee, P. K. Sen, K. Das, **S.C. Bhattacharya** and R. M. Palepu, J. Dis. Sci. & Tech. 27, **2006**, 5.

71. Interface of AOT/ Igepal CO 720/ Cyclohexane / Water mixed reverse micelles by spectroscopic approach, S. Chatterjee, S. Nandi, and **S. C. Bhattacharya**, Colloid Surface A, 279, **2006**, 58-63.

72. Interface of AOT/Brij mixed reverse micellar systems: Conductometric and spectrophotometric investigations, S. Chatterjee, R. K. Mitra, B. K. Paul, **S. C. Bhattacharya**, Journal of Colloid and Interface Science, 298, **2006**, 935-941.

73. Physicochemical studies on cetylammmonium bromide and its modified (mono-, di- and tri-ethoxylated) head group analogues. Their micellization characteristics in water and thermodynamics and structural aspects of water-in-oil microemulsions formed with them along with *n*-hexanol and isooctane, D. Mitra, I. Chakraborty, **S. C. Bhattacharya**, S. P. Moulik, J. Phys. Chem. B, 110, **2006**, 11314-11326.

74. Photophysical properties of Safranin T in aqueous glycol oligomer mixture, S. A. Moore, **S. C. Bhattacharya**, R. M. palepu, J. Solution Chemistry 35,**2006**,471-483.

75. Effect of solvent on the quenching of fluorescence of Safranin T in binary solvent mixtures, P. K. Khatua, S. Chatterjee & **S. C. Bhattacharya**, J. luminescence 121, 2006, 488-496.

76. Synthesis and characterization of aluminium doped CdO thin films by sol-gel process R.Maity and K.K.Chattopadhyay, **Solar Energy Mat. and Sol. Cells**, **90** (2006) 597-606.
77. Synthesis and optical characterization of CdS nanowires by chemical process, R. Maity and K.K. Chattopadhyay, **Journal of Nanoparticle Research**, **8** (2006) 125-130.
78. Low-Temperature Deposition of ZnO Thin Films on PET and Glass Substrates by DC-Sputtering Technique, A. N. Banerjee, C. K. Ghosh, K. K. Chattopadhyay, Hideki Minoura, A K. Sarkar, A. Akiba, A. Kamiya and T. Endo,, **Thin Solid Films**, **496** (2006)112-116.
79. Synthesis and structural characterization of crystalline carbon nitride thin films by electrolysis of urea-methanol solution, S. Kundoo, P. Saha and K.K. Chattopadhyay, **Advances in Applied Ceramics**, **105** (2) (2006) 73 –77.
80. Synthesis and optical characterization of polymer-capped nanocrystalline ZnS thin films by chemical process, R.Maity, U.N. Maiti, M.K. Mitra and K.K.Chattopadhyay **Physica E**, **33** (2006) 104-109.
81. Structural and optical characterization of CdS nanofibers synthesized by dc-sputtering technique, P. K. Ghosh, U.N. Maiti and K. K. Chattopadhyay, **Materials Letters** **60** (2006) 2281-2285.
82. Highly conducting transparent nanocrystalline Cd_{1-x}Sn_xS thin film synthesized by RF magnetron sputtering and studies on its optical, electrical and field emission properties P. K. Ghosh, U. N. Maiti, Sk. F. Ahmed and K. K. Chattopadhyay, **Solar Energy Materials and Solar Cells**, **90** (2006) 2616-2629.
83. Synthesis and characterization of CdS nanowire by chemical route, R. Maity and K.K. Chattopadhyay, **Materials and Manufacturing Processes** (Taylor & Francis), **21** (2006) pp. 644-647.
84. Structural and optical properties of some ii-vi semiconductor nanocrystals synthesized by rf-magnetron sputtering technique, One Chapter in a Book (Invited) “Nanotechnology at the Leading Edge”, NOVA publishers (USA) 101-148, 2006.
85. Field emission from ZnS nanorods synthesized by radio frequency magnetron sputtering technique, P.K.Ghosh, U.N. Maiti, S. Jana and K.K.Chattopadhyay, **Applied Surface Science** **253** (2006) 1544-1550.
86. Microstructural and photo luminescence studies on hydrothermally synthesized Ce-doped barium titanate nanocrystals., T. Sahoo, S. K. Tripathy, S.Nandy, K. K. Chattopadhyay* and S. Anand, **Materials Science and Engg. B** **131** (2006) 277-280.

87. Effect of Al doping on the conductivity type inversion and electro-optical properties of SnO₂ thin films synthesized by sol-gel technique, Sk. F. Ahmeda), S. Khan, P. K. Ghosh, M.K. Mitra and K. K. Chattopadhyay, **Journal of Sol-Gel Science and Technology** **39**, (2006) 241-247.
88. Patterning of Thin Copper Films under UV Exposure in Chlorine-Based Liquids K. K. Chattopadhyay Jongkyu Cho, Jihoon Kwak, Jaisun Kyoung, Okkyung Kim and Ilsin An; **Journal of Korean Society of Physics**, Vol. 48, (2006) , pp. 1273-1276
89. Development of bioconcrete material using a novel thermophilic anaerobic bacterium, P. Ghosh, S. Mondal, S. Pal, G. Bandopadhyay and B.D. Chattopadhyay, *Ind. J. Expt. Biol.* 44 (2006). 336.
90. Effect of addition of micro-organism on the strength P. Ghosh, S. Mondal, B.D. Chattopadhyay, *Ind. Concrete journal* (2006) 45.
91. A Subthreshold Surface Potential Model for Short-Channel MOSFET Taking Into Account the Varying Depth of Channel Depletion Layer Due to Source and Drain Junctions. S. Baishya, A. Mallik and C.K. Sarkar **IEEE trans. Electron devices** Vol **53.No.3.** (2006)
92. Ac conductivity analysis for a metal core-silver orthosilicate shell nanostructure, B. Ghosh, D. Chakraborty, J.R. Macdonald and G.C. Das, **J. Appl. Phys.** 99 (2006) 064307.
93. Frequency Depended Magnetic Conductivity Study in Ni Dispersed Silica Nanocomposites Produced by Sol – Gel Technique, S. Mukherjee, G.C. Das, M.K. Mitra et al., **Czech. Journal of Physics**, vol-56, 2006, 201-210.
94. The Reaction Kinetics of NiCl₂ in SiO₂ – Alumina Gel Matrix, **Journal of Physics & Chemistry of Solids**, S. Mukherjee, G.C. Das, M.K. Mitra et al., 2006, 1-15.
95. Optimization of Reduction parameters of NiCl₂ to Ni in the Gel Matrix. **Journal of Indian Chemical Society**, S. Mukherjee, G.C. Das, M.K. Mitra et al., Vol-83, 2006, 221-228.
96. Development of Metal Specific Reagent for Ni & Co Extraction. S. Mukherjee, G.C. Das, M.K. Mitra et al.. **Journal of Ultra Scientists**, September, 2006,
97. Hydration of Coked MgO – C – Al Refractories., G.C. Das, M.K. Mitra et al.. **Ceramic International**, 32(2), 2006, 163.

In 2007:

98. Effect of Mn doping on the optical and structural properties of ZnO nano/micro fibrous thin film synthesized by sol-gel technique; U. N. Maiti, P. K. Ghosh, S. Nandy and K. K. Chattopadhyay, **Physica B 387 (2007) pp. 103-108**
99. Structural, optical and photoelectron spectroscopic studies of nano /micro ZnO: Cd rods synthesized via sol-gel route, U. N. Maiti, P. K. Ghosh, Sk. F. Ahmed, M.K. Mitra and K. K. Chattopadhyay, **Journal of Sol-Gel Science and Technol 41 (2007) pp. 87-92**
100. Size dependent optical and dielectric properties of nanocrystalline ZnS thin films synthesized via RF-magnetron sputtering technique, P. K. Ghosh, S. Jana, S. Nandy and K. K. Chattopadhyay, *Materials Research Bulletin (Elsevier) (In Press)*.
101. Effect of particle size and inter-electrode distance on the field emission properties of nanocrystalline CdS thin films grown in a polymer matrix by chemical bath deposition, P.K.Ghosh, S. Jana, U. N. Maity and K.K.Chattopadhyay, *Physica E (In Press)*.
102. Low-macroscopic field emission from nanocrystalline Al doped SnO₂ thin films synthesized by sol-gel technique, Sk. F. Ahmed, P. K.Ghosh, S. Khan, M.K. Mitra and K. K. Chattopadhyay, **Applied Physics A 86 (1) (2007)**, pp. 139-143.
103. Structural and optical properties of ZnS nanostructured films synthesized via RF-magnetron sputtering technique, P. K. Ghosh, Sk. F. Ahmed, U. N. Maiti and K. K. Chattopadhyay; *Ind. J. Physics (In Press)*.
104. Photoluminescence and field emission properties of ZnS:Mn nanoparticles synthesized by R.F. magnetron sputtering technique, P. K. Ghosh, Sk. F. Ahmed, S. Jana and K. K. Chattopadhyay, **Optical Materials (In Press)**.
105. Low-macroscopic field emission from carbon fibers synthesized by direct current plasma enhanced chemical vapor deposition, Sk. F. Ahmed, S. Das, M.K. Mitra and K. K. Chattopadhyay, **Ind. J. of Pure and Applied Physics (In Press)**.
106. Performance comparison of channel engineered deep sub-micrometer pseudo SOI n-MOSFETs P.Sarkar, A.Mallik and C.K.Sarkar **Microelectronics Reliability, (In Press)**.
107. Impact of Halo Doping on the Subthreshold Performance of Deep Submicrometer CMOS Devices and Circuits for Ultra-Low Power Analog/Mixed-Signal Applications S.Chakraborty, A.Mallik, C.K.Sarkar and V.Ramgopal Rao *IEEE trans.Electron Devices (In Press)*.
108. Realization of Quantum Dot (QD) Boolean Logic Gate for Image Processing Applications M.Ganluly and C.K.Sarkar *JEI (In Press)* .

109. Effect of oxygen partial pressure on the electrical and optical properties of highly (200) oriented p-type Ni_{1-x}O films by DC sputtering, S. Nandy, M.K. Mitra and K.K. Chattopadhyay, **Journal of Materials Science (In Press)**.
110. Impedance spectroscopic studies of nickel nanocluster in silica matrix synthesized by sol-gel method, S.Nandy, S. Mallick, P.K.Ghosh, G.C. Das, S. Mukherjee, M.K.Mitra and K.K.Chattopadhyay, Journal of Alloys and Compounds (In Press).
111. Spectroscopic studies of 2-(2-Bromoethyle)-6-nitro benzo [de] isoquinolene-1,3-dione in water/alkanol mixed solvents and nonionic micelle, P. Banerjee, S. Chatterjee, S. Pramanik, SK. U. Hossain, S. Bhattacharya & **S. C. Bhattacharya**, Spectrochemica Part A (in press).
112. Fluorescence Quenching of 3,7-diamino-2,8-dimethyl-5-phenyl Phenazinium Chloride by AgCl and Ag Nanoparticles, S. Pramanik, **S. C. Bhattacharya** and T. Imae, J.Luminescence (In Press).
113. Solution behaviour of symmetrical tetraalkyl ammonium bromides and there SDS interaction ion pair with reference to interfacial adsorption, self aggregation and clouding.D. mitra, I. Chakraborty, **S. C. Bhattacharya** & S. P. Moulik J. Colloid Interface Science(In Press)
114. Dying of wool and silk with paramagnate – some fundamental consideration, D. Das, **S. C. Bhattacharya** & S. Ray Moulik , Indian J. Of Fibre and textile Research (In Press).
115. Synthesis and characterization of nanodispersed molecular aggregates of Prussian Blue in AOT reverse micelle, S. Pramanik, D. Das, K. Das and **S. C. Bhattacharya**. J. Naosci. Nanotech. (In Press).
116. Synthesis and photoinduced intramolecular charge transfer of *N*-substituted 1,8-naphthalimide derivatives in homogeneous solvents and in presence of reduced glutathione. S. Chatterjee, S. Pramanik, Sk U. Hossain, S. Bhattacharya and **S. C. Bhattacharya**. J. Photochem. Photobiol. A (In Press).
117. Interaction of 8-hydroxypyrene-1,3,6-trisulphonate in Alkyltrimethylammonium Bromide (C_nTAB) Micellar Medium, S. Pramanik, P. Banerjee and **S. C. Bhattacharya**, J. Photochem. Photobiol. A (In Press).
118. Optimization of process parameters for the synthesis of silica gel – WC nano-composite by design of experiment. S.Mukherjee,G.C.Das,M.K.Mitra et al.. **Materials Science and Engineering C, (In Press)**