FACULTY PROFILE

BASIC PROFILE

DR. ASIM GUCHHAIT

Assistant Professor

Dept. of Physics

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Contact No:

Academic Qualification: M.Sc, Ph.D

SERVICE HISTORY

Year of Joining	**:**	2017
Previous Employment, if any	**:**	Post-Doctoral Research Fellow, Nanyang Technological University Post-Doctoral Research Associate, National University of Singapore
Experience in Teaching	**:**	UG – 1 year PG – 1 year
Area of Teaching: Solid State Physics, Material Preparation and characterizations, Quantum mechanics, electronics		
Area of Specialization: SOLID STATE PHYSICS, SEMICONDUCTOR DEVICE PHYSICS		
Participation in Administrative activities:		

RESEARCH PROFILE

Area of Research Interest: FABRICATION AND CHARACTERIZATION OF SOLAR CELLS BASED ON, SEMICONDUCTOR NANOMATERIALS, ORGANIC POLYMER, CZTS MATERIALS, HYBRID PEROVSKITE MATERIALS; ASSEMBLY OF ANISOTROPIC NANOMATERIALS AND THEIR OPTOELECTRONICS APPLICATIONS

Research Experience	Post-Doctoral Research Fellow, Nanyang Technological University, Singapore, August 2015-May 2017 Post-Doctoral Research Associate, National University of Singapore, July 2013 to July, 2015

Conference/Seminar/Workshop Organised:

Projects ongoing / completed:

Title	Funding Agency	Year	Amount (Rs.)

Fellowship (s) / Award (s): CSIR-NET JRF & SRF, AWARDED GOLD CENTERED SILVER MEDAL FOR THE FIRST POSITION IN M.SC. EXAMINATION

Involvement in other research activities:

Supervisor:

Adjudicator:

Reviewer: Solar Energy (Elsevier)

Involvement in Academic/ Professional Organizations:

Editorial Board Member:

Publications:

Books :

Edited Books:

Chapters in Books :

Journals:

1) G K Dalapati, S Zhuk, S M-Panah, A Kushwaha, H L Seng, V Chellappan, V Suresh, Z Su, S K Batabyal, C C Tan, A Guchhait, L H Wong, T K S Wong, S Tripathy, *Impact of molybdenum out diffusion and interface quality on the performance of sputter grown CZTS based solar cells*, **Scientific Reports,** 7, (1), 1350, 2017
2) A Guchhait, H A Dewi, S W Leow, H Wang, G Han, F B Suhaimi, S G Mhaisalkar, L H Wong, N Mathews, *Over 20% Efficient CIGS–Perovskite Tandem Solar Cells,***ACS Energy Letters,** 2, (4), 807–812, 2017
3) Wen-Ya Wu, SabyasachiChakrabortty, Asim Guchhait, Gloria Yan Zhen Wong, Goutam Kumar Dalapati, Ming Lin, Yinthai Chan*, Solution-Processed 2D PbSNanoplates with Residual Cu2S Exhibiting Low Resistivity and High Infrared Responsivity*, **Chemistry of Materials**, 28, (24), 9132-9138, 2016
4) Asim Guchhait, Zhenghua Su, Ying Fan Tay, Sudhanshu Shukla, Wenjie Li, Shin WoeiLeow, Joel Ming Rui Tan, Stener Lie, Oki Gunawan, Lydia Helena Wong, *Enhancement of Open-Circuit Voltage of Solution-Processed Cu2ZnSnS4 Solar Cells with 7.2% Efficiency by Incorporation of Silver*, **ACS Energy Letters,** 1, (6), 1256-1261, 2016
5) SabyasachiChakrabortty, Asim Guchhait, Xuanwei Ong, Nimai Mishra, Wen-Ya Wu, Mark HyunpongJhon, Yinthai Chan, *Facet to facet linking of shape anisotropic inorganic nanocrystals with site specific and stoichiometric control*, **Nano Letters**, 16, (10), 6431-6436, 2016
6) N Mishra, B Mukherjee, G Xing, S Chakrabortty, A Guchhait, JY Lim, *Cation exchange synthesis of uniform PbSe/PbS core/shell tetra-pods and their use as near-infrared photodetectors*, **Nanoscale**, 8, (29), 14203-14212, 2016
7) B Mukherjee, A Guchhait, Y Chan, E Simsek*, *Absorptance of PbS quantum dots thin film deposited on trilayer MoS_2*, **Advanced Materials Letters**, 6, (11), 936-940, 2015
8) Sudip K Saha, Asim Guchhait and Amlan J Pal, *Materials Research and Opportunities in Solar (Photovoltaic) Cells,***Proc Indian NatnSciAcad**, 81, (4), 1023-1036, 2015
9) Wen-Ya Wu, SabyasachiChakrabortty, Corina K. L. Chang, Asim Guchhait, Ming Lin, and Yinthai Chan*,*Promoting 2D growth in colloidal transition metal sulfide semiconductor nanostructures via halide ions*, **Chemistry of Materials**, 26, (21), 6120-6126, 2014
10) SaikatBhaumik, Asim Guchhait and Amlan J Pal*, *Light-emitting diodes based on nontoxic zinc-alloyed silver–indium-sulfide (AIZS) nanocrystals*, **Physica-E: Low-dimensional systems and nanostructures**, 58, 124-129, 2014
11) Sudip K. Saha, Asim Guchhait and Amlan J Pal*, *Hybrid pn-junction solar cells based on layers of inorganic nanocrystals and organic semiconductors: Optimization of thickness of the layers by considering width of the depletion region*, **Physical Chemistry Chemical Physics,** 16, (9), 4193-4201, 2014
12) Asim Guchhait and Amlan J. Pal*, *Copper-diffused AgInS2 ternary nanocrystals in hybrid bulk-heterojunction solar cells: Near-infrared active nanophotovoltaics*, **ACS applied materials & interfaces,** 5, (10), 4181-4189, 2013
13) Asim Guchhait, Samaresh Das, Samit K. Ray and Amlan J. Pal*, *Photoinduced Hole-Transfer in Nanoparticle-Dye Hybrid Composites: A Route for Exciton Dissociation Leading to Photovoltaic Devices*, **Nanoscience and Nanotechnology Letters**, 5, (1), 13-18, 2013
14) Sudip K. Saha, Asim Guchhait and Amlan J. Pal*,*Cu_2ZnSnS_4 (CZTS) nanoparticle based nontoxic and earth-abundant hybrid pn-junction solar cells,***Physical Chemistry Chemical Physics,** 14, (22), 8090-8096, 2012
15) Sudip K. saha, Asim Guchhait and Amlan J. Pal*, *Organic/inorganic hybrid pn-junction solar cells based on copper phthalocyanine and CdSe quantum dots,***Journal of Applied Physics**, 112, (4), 044507, 2012
16) Asim Guchhait and Amlan J. Pal*, *Photoinduced electron transfer from the inorganic core to the organic shell of hybrid core–shell nanoparticles: impedance spectroscopy*, **Chemistry–An Asian Journal,** 7, (5), 1096-1102, 2012
17) Asim Guchhait, Arup K. Rath and Amlan J. Pal*, *To make polymer:quantum dot hybrid solar cells NIR-active by varying size of PbSnanoparticles*, **Solar energy materials and solar cells**, 95, (2), 651-656, 2011
18) Asim Guchhait and Amlan J. Pal*, *Correlation between photoinduced electron transfer and photovoltaic characteristics in solar cells based on hybrid core-shell nanoparticles***, The Journal of Physical Chemistry C,** 114, (45), 19294-19298, 2010
19) Asim Guchhait, Arup K. Rath and Amlan J. Pal*, *Near-IR activity of hybrid solar cells: Enhancement of efficiency by dissociating excitons generated in PbSnanoparticles*,**Applied Physics Letters**,**96**, 073505, 2010

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Conf. Proceedings:
1) Z Su, W Li, G Asim, TY Fan, LH Wong, *Cation substitution of CZTS solar cell with> 10% efficiency*, **Photovoltaic Specialists Conference (PVSC),2016 IEEE 43rd**, Portland, OR, USA, 0534-053, 2016 E Simsek*, B Mukherjee, A Guchhait, YT Chan*, Enhanced absorption with quantum dots, metal nanoparticles, and 2D materials*, **Proc. of SPIE OPTO**, California, United States, 9758, 97580G-1-97580G-6, 2016

Any other relevant information	**:**	

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Last update on 01-06-2018