



Techno College of Engineering Agartala

An Engineering College affiliated to Tripura University (A Central University),

Approved by AICTE, MHRD, Govt. of India

Website: www.tiaedu.org

Name of the faculty: Dr. Sekhar Chakraborty

Designation: Associate Professor

Education: PhD

Contact: Flat-4A9, Dreamz Exotica, 4th Floor, Bholagiri, P.O.: Kunjaban

PIN: 799006, Tripura, INDIA, (+91)-9485141530

Address: Department of Basic Science & Humanities, Techno College of Engineering Agartala,

Maheshkhola, PIN: 799004

Mobile: +91-9485141530

Email : chakraborty.sekhar@tiaedu.org

Research Interest:

- Organo-clay hybrids film preparation and their characterization for device fabrication
- Polydiacetyene phase behaviour; Designing various bio-sensors / chemical sensors

Membership of professional bodies: Life member of Indian Science Congress (L13894)

Professional Experience: FROM 2018 TO Till date (8 years) working as Associate Professor in Basic Science and Humanities Department, Techno College of Engineering Agartala.

FROM 2017 TO 2018 (1 YEAR) Research Associate (Post Doctorate): Tripura University (A Central University)

Advisor: Dr. Syed Arshad Hussain

FROM 2013 TO 2015 (2 YEARS) Postdoctoral Fellow: Ben-Gurion University of the Negev, Israel

Advisor: Prof. Amir Berman, Prof. Yuval Golan Prof. N. Gabriel Lemcoff

FROM 2011 TO 2012 (1 YEAR)

Senior Research Fellow (CSIR): Tripura University (A Central University)

FROM 2007 TO 2008 (1 YEAR) Lecturer in Physics: Tripura Institute of Technology, Agartala,

India

Patents: 01, German patent application granted on 28.03.2023: (RefNo. 202022107204)

Title: Film for colorimetric sensing of volatile organic compounds (VOCs), gasoline and pollution in car exhaust





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Field of invention: The present disclosure relates to a field of chemical engineering and in particular relates to Polydiacetylenes-1-Hexadecyl Imidazole Mixed Film and its Application towards Sensing of Volatile Organic Compounds (VOCs), Gasoline and Pollution Level in Car Exhaust.

Publications: Total: 15, International: 12, National: 01, Review: 02, Book Chapter/Conference Proceeding:03

Publishes Journal/ Conference papers/ Book/ Book Chapters :

2021

(15) Polydiacetylene-N-1-Hexadecyl Imidazole Mixed Film and Its Application toward the Sensing of Volatile Organic Compounds, Gasoline, and Pollution Level in Car Exhaust

Sudip Suklabaidya, **Sekhar Chakraborty**, Surajit Sarkar, Ripa Paul, Hritinava Banik, Ankita Chakraborty, Debajyoti Bhattacharjee, Swapan Majumdar, and Syed A. Hussain

J. Phys. Chem. C 2021, 125, 15976–15986 (<https://doi.org/10.1021/acs.jpcc.1c04338>) (ACS)

2020

(14) Study of polydiacetylenes and rhodamine-800 mixed film at air–water interface and onto solid support: Trace of fluorescence resonance energy transfer (FRET)

Sudip Suklabaidya, **Sekhar Chakraborty**, Jaba Saha, Bapi Dey, Surajit Sarkar, Debajyoti

Bhattacharjee & Syed Arshad Hussain . Polymer Bulletin (DOI 10.1007/s00289-020-03102-w)

(Springer)

2019-2018

(13) Phase behavior of poly diacetylene mixed with a xanthene dye at air–water interface and onto solid support

Sudip Suklabaidya, **Sekhar Chakraborty**, Bapi Dey, D. Bhattacharjee & Syed Arshad Hussain

SOFT MATERIALS 2019, VOL. 17, NO. 1, 77–92 <https://doi.org/10.1080/1539445X.2018.1548358>

(Taylor & Francis)

(12) Electrical switching behaviour of a metalloporphyrin in Langmuir-Blodgett film

Bapi Dey, **Sekhar Chakraborty**, Santanu Chakraborty, Debajyoti Bhattacharjee, Inamuddin, Anish

Khan, Syed Arshad Hussain

Organic Electronics 55 (2018) 50–62 (Elsevier)

2015

(11) Fluorescence Resonance Energy Transfer (FRET) sensor

Syed Arshad Hussain, Dibyendu Dey, **Sekhar Chakraborty**, Jaba Saha, Arpan Datta Roy, Santanu Chakraborty, Pintu Debnath, D. Bhattacharjee

Journal of Spectroscopy and Dynamics 2015, 5:7, 1-16.

2013

(10) Adsorption of congo red in cationic Langmuir-Blodgett films: spectroscopic investigations.

S. A. Hussain, J. Bhattacharjee, **S. Chakraborty**, D. Bhattacharjee



Journal of Surface Science and Technology 29(2013), No. 3-4, pp. 1-13.

(9) Development of hard water sensor using Fluorescence Resonance Energy Transfer

Dibyendu Dey, D. Bhattacharjee, **S. Chakraborty**, Syed Arshad Hussain

Sensors & Actuators: B. Chemical 184 (2013) 268– 273.

(8) Incorporation of nano-clay saponite layers in the organo-clay hybrid films using anionic amphiphile stearic acid by Langmuir – Blodgett (LB) technique

Syed Arshad Hussain, **S. Chakraborty**, D. Bhattacharjee, R. A.Schoonheydt

Thin Solid Films 536 (2013) 261–268.

(7) Nano Dimensional Hybrid Organo-clay Langmuir-Blodgett Films

Syed Arshad Hussain, **S. Chakraborty** and D. Bhattacharjee

Current Physical Chemistry Volume 3, Number 3, August 2013, 322-332(11)

(6) Effect of nanoclay laponite and pH on the energy transfer between fluorescent dyes

Dibyendu Dey, D. Bhattacharjee, **S. Chakraborty**, Syed Arshad Hussain

Journal of Photochemistry and Photobiology A: Chemistry 252 (2013) 174

(5) Development of a DNA sensor using molecular logic gate

D. Bhattacharjee, Dibyendu Dey, **S. Chakraborty**, S. A. Hussain, S. Sinha

Journal of Biological Physics 06/2013; 39(3):387-94

2011

(4) Adsorption kinetics of a fluorescent dye in a long chain fatty acid matrix

Syed Arshad Hussain, Soma Banik, **S. Chakraborty**, D. Bhattacharjee

Spectrochimica Acta Part A 79 (2011) 1642– 1647.

2010

(3) Fluorescence Resonance Energy Transfer between organic dyes adsorbed onto nano-clay and Langmuir–Blodgett (LB) films

Syed Arshad Hussain, **S. Chakraborty**, D. Bhattacharjee, R.A. Schoonheydt

Spectrochimica Acta Part A 75(2010) 664-670.

(2) Effect of nano-clay platelets on the J-aggregation of thiocyanine dye organized in Langmuir–Blodgett films: A spectroscopic investigation

D. Bhattacharjee, Syed Arshad Hussain, **S. Chakraborty**, R.A. Schoonheydt

Spectrochimica Acta Part A 77(2010) 232-237

(1) Investigations of RhB Langmuir monolayer by Fluorescence Imaging Microscopy

S. A. Hussain, **S. Chakraborty** and D. Bhattacharjee

Indian J. Phys. 84 (2010) 625-629.

Book chapter and Conference Proceedings

2019



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(3) Polydiacetylene and imidazole mixed self-standing films for colorimetric detection of various volatile organic analytes.

Sudip Suklabaidya, **S Chakraborty**, S Sarkar, D Bhattacharjee, Syed Arshad Hussain

Journal of Physics: Conference Series, Vol. 1330 Issue 1 Pages 012012

2018

(2) Polydiacetylene (PDA) Film: A unique sensing element

Sekhar Chakraborty, Sudip Suklabaidya, D. Bhattacharjee, Syed Arshad Hussain

Materials Today: Proceedings 5 (2018) 2367–2372 (Elsevier)

2012

(1) Molecular logic gates using FRET phenomenon

Dibyendu Dey, D. Bhattacharjee, **S. Chakraborty** and Syed Arshad Hussain

Chapter in the book '*Recent Trends of Research in Physics*'

(ISBN 81-87500-00-0 2012) Research India Publications,

Delhi-110089, India. Email: republication@vsnl.net. pages: 41-45

Achievements (if any): **AWARDS & HONOURS**

2014

Krietman Post doctoral fellowship in Israel

2013

Post doctoral fellowship in Israel funded by US Department of Defense (DoD)

2012

Senior Research Fellowship for Ph.D., CSIR, India

2006

Holding the **gold medal** for getting the top position during the Master's degree

Hobbies: Cooking, Roaming, Watching Movies.