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(Joined on March 2, 2015)  
Designation: **Assistant Professor, HOD**  
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### **CURRENT RESEARCH INTEREST:**

Experimental and simulation study of the pattern formation of sessile drop.

### **PUBLICATIONS:**

- 1) A. Ghosh, S. Sircar, **T. Khatun**, T. Dutta and S. Tarafdar, Tree-like crack patterns in clay dried in a uniform DC electric field. *Mater. Res. Express*, **6**, 026305 (2019).
- 2) T. Dutta, S. Tarafdar and **T. Khatun**, Multi-scale patterns formed by sodium sulphate in a drying droplet of gelatin: experiment and simulation in 2-dimensions. *J. Phys. Commun.* **2**, 055023 (2018).
- 3) **T. Khatun**, T. Dutta and S. Tarafdar, "Islands in Sea" and "Lakes in Mainland" phases and related transitions simulated on a square lattice. *Eur. Phys. J. B.* **90**, 213 (2017).
- 4) S. Hazra, S. Sircar, **T. Khatun**, M. Dutta Choudhury, A. Giri, S. Karmakar, T. Dutta, S. Das and S. Tarafdar, Unstable crack propagation in Laponite gels: selection of a sinusoidal mode in an electric field. *RSC Advances* **6**, 64297 (2016).
- 5) S. Sircar, **T. Khatun**, T. Dutta and S. Tarafdar, Alternating Field Induced Crack Patterns in Desiccating Laponite Solutions: Experiment and Simulation. *Indian Journal of Physics*, **90(12)**, 1355 (2016).
- 6) **T. Khatun**, T. Dutta and S. Tarafdar, Topology of desiccation crack patterns in clay and invariance of crack interface area with thickness. DOI 10.1140/epje/i2015-15083-6, *Eur. Phys. J. E.* **38**: 83 (2015).

- 7) **T. Khatun**, T. Dutta and S. Tarafdar, Crack Formation on a Drying Droplet in the Presence of Static Electric Field. *J. Surface Sci. Technol.* **30, 17 (2014)**.
- 8) **T. Khatun**, T. Dutta and S. Tarafdar, Crack Formation under an Electric Field in Droplets of Laponite Gel: Memory Effect and Scaling Relations. [dx.doi.org/10.1021/la404297k](https://doi.org/10.1021/la404297k) | *Langmuir* **29, 15535 (2013)**.
- 9) **T. Khatun**, T. Dutta and S. Tarafdar, Crack formation in Laponite gel under AC fields. *Applied Clay Science* **86, 125 (2013)**.
- 10) **T. Khatun**, M. D. Choudhury, T. Dutta and S. Tarafdar, Electric-field-induced crack patterns: Experiments and simulation. *Phys. Rev. E* **86, 016114 (2012)**.

### **PAPER PRESENTED IN CONFERENCE:**

#### **International:**

- 1) **Tajkera Khatun**, Moutushi Dutta Choudhury, Tapati Dutta and Sujata Tarafdar, ‘Topological behavior of drying: Euler Number’, Statphys Kolkata IX, SINP, India, December 13-16, 2016.
- 2) **Tajkera Khatun**, Tapati Dutta and Sujata Tarafdar, ‘Crack formation on a drying droplet in the presence of a static electric field’ 5<sup>th</sup> Asian Conference on Colloid and Interface Science, University of North Bengal, Darjeeling, West Bengal, India, November 20-23, 2013, Page – 223-224.
- 3) **Tajkera Khatun**, Tapati Dutta, Sujata Tarafdar, Akio Nakahara, So Kitsunozaki, Chiyori Urabe, Ooshida Takeshi and Nobyasu Ito, ‘Crack formation in droplets and rectangular samples of Laponite gel dried under an electric field’, DROPLET – 2013, 1<sup>st</sup> International workshop on wetting and evaporation, Marseilles, June 17-20, 2013, Pages – 201-202.

#### **National:**

- 1) **Tajkera Khatun**, ‘Crack formation on a drying droplet of Laponite in the presence of a static electric field’, 17<sup>th</sup> National Conference On Surfactants, Emulsions & Biocolloids (NATCOSEB XVII), Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, November 04 – 06, 2015, Page – 6.
- 2) **Tajkera Khatun**, ‘Study of crack patterns in desiccating clay materials’, Young Scientists’ Colloquium 2015, CGCRI, Kolkata, 11<sup>th</sup> September 2015.
- 3) **Tajkera Khatun**, Tapati Dutta and Sujata Tarafdar, ‘Topology of Crack Patterns by Varying Layer Thickness of Film’, Condensed Matter Day – 2015, Visva-Bharati, Santiniketan, August 27-29, 2015, Page – 66.
- 4) **Tajkera Khatun**, Moutushi Dutta Choudhury, Tapati Dutta and Sujata Tarafdar, ‘Experiment And Simulation Of Crack Pattern In Desiccating Clay In An Electrostatic Field:

Memory Effect', UGC – Sponsored National Seminar on Mathematical Methods in Applied Sciences (NSMMAS - 2011), Gokhale Memorial Girls' College, Kolkata, December 9, 2011.

### **CONFERENCES ATTENDED**

#### **International:**

- James A Krumhansl School and Symposium on *Unifying Concepts in Materials*, JNCASR & NCBS, Bangalore, India, 30<sup>th</sup> January to 8<sup>th</sup> February, 2012.

#### **National:**

- National seminar on APPLICATION OF GENERALIZED CALCULUS IN PHYSICS AND APPLIED MATHEMATICS organized by CMPRC Lab, Jadavpur University and Indian Society of Non-linear Analysis (ISNA) held at Jadavpur University, Kolkata - 700032, 26<sup>th</sup> - 27<sup>th</sup> April, 2016.
- Seminar on NATIONAL TEACHERS' DAY 2015, Rajabazar Science College, Kolkata, 5<sup>th</sup> September, 2015.
- Trends in Surface Science and Related Areas (TSSRA – 2014), Department of Chemistry, Presidency University and Indian society for Surface Science and Technology, 24<sup>th</sup> July, 2014.
- Recent Trends in Condensed Matter Physics (RTCMP – 2014), Condensed Matter Physics Research Centre, Jadavpur University, Kolkata – 700032, 26<sup>th</sup> -27<sup>th</sup> June, 2014.
- Trends in Surface Science and Related Areas (TSSRA – 2013), Indian society for Surface Science and Technology, Department of Pharmaceutical Technology, Jadavpur University, Kolkata – 700032, 3<sup>rd</sup> May, 2013.
- Impact of Ramanujan's contributions in recent trends in Mathematical Sciences, Indian Society of Non-linear Analysis and Physics department of Jadavpur University, 23<sup>rd</sup> – 24<sup>th</sup>

November, 2012.

- Quantum Mechanics: Inception, Evolution & Future, Physics Department, Narasinha Dutt College, Howrah and Seth Anandram Jaipuria College, Kolkata, 24<sup>th</sup> – 26<sup>th</sup> November, 2011.

### **Awards / Recognition:**

- ✓ The publication “**T. Khatun**, T. Dutta and S. Tarafdar, Crack Formation on a Drying Droplet in the Presence of Static Electric Field. *J. Surface Sci. Technol.* **30, 17 (2014)**” has been awarded as **Best Paper** for **JSST 2014** in the 17<sup>th</sup> National Conference On Surfactants, Emulsions & Biocolloids held at Pt. Ravishankar Shukla University during November 04 – 06, 2015.



- ✓ The **cover page** of the journal **EPJE**, volume 38. number 8. August. 2015 has been made by a figure of publication “**T. Khatun**, T. Dutta and S. Tarafdar, Topology of desiccation crack patterns in clay and invariance of crack interface area with thickness. DOI 10.1140/epje/i2015-15083-6, *Eur. Phys. J. E.* **38: 83 (2015)**”.

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