# Edwine Tendong

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## Summary

Passionate about molecular modeling, energy materials, properties of materials from computer simulations, machine learning prediction of material properties and Nanotechnology. Proven track record of research excellence, including publications in international journals and presentations at conferences. Critical thinker, team player, eager learn and to contribute to cutting-edge research in material science.

## Employment History

Sept. 2022 – present **Tutor**, *African Institute for Mathematical Sciences (AIMS) Cameroon*
Physics, Data Science, Climate Science, Statistics

2017–2022 **Research Fellow** , *SN Bose National Centre for Basic Sciences*, Block JD Sector 3, Salt-Lake Kolkata 700106, India.

- Investigated using molecular simulations, the properties of fluids under nano confinement, and colloidal nanoparticles suspended in different solvents.
- Authored and co-authored several peer reviewed research articles.
- Presented research findings at numerous international conferences, in form of talks and poster presentations.

2011–2016 **High School Physics Teacher**, *Ministry of secondary Education*, Cameroon

- Planed and delivered quality Physics and Mathematics lessons to high school students
- Organized and supervised student's laboratory work in Physics.
- Organized continuous assessment and graded student's performance.
- Assisted in school administrative duties.

## Education

2017–2023 **PhD.**, *S N Bose National Centre for Basic Sciences, Calcutta University*
Condensed Matter Physics and Material Sciences.

2015–2016 **MSc.**, *African Institute for Mathematical Sciences*, AIMS-Cameroon.
Masters in Mathematical Science

2012–2014 **MSc.**, *University of Dschang*, Cameroon
Masters in Theoretical Physics

2010–2012 **DIP. Ed**, *University of Bamenda*, Cameroon
Diploma, Curriculum Studies and Teaching

2006–2009 **B.Sc.**, *Physics*, University of Buea, Cameroon

## Doctoral thesis

Title **Properties of materials at interfaces.**

Advisors *Prof. Tanusri Saha-Dasgupta*, Director, SN Bose national Centre for Basic Sciences

*Prof. Jaydeb Chakrabarti*, Senior Professor, SN Bose national Centre for Basic Sciences

Description We used classical and *ab-initio* molecular simulations to study properties of nano-confined fluids, and colloidal nanoparticle suspensions. We showed that liquids confined in nano gaps by dissimilar surfaces, exhibit structural heterogeneity, with Fikian non-Gaussian heterogeneous dynamics, which can be exploited for rapid water filtration, design of drug delivery devices and design of hetero-structure electrodes for energy applications. We investigated the viscoelastic response of asymmetrically nano-confined liquids, and found a universal two stage behavior in viscoelastic relaxation time with changing slit asymmetry. We found gel-like behaviour in confined fluids close to the ordering transition. We also investigated colloidal nanoparticle suspensions and showed that self assembly of perovskite nano-particles in different solvents was mediated by unequal ligand adsorptionon on nano-particle surfaces, with important implications for design of stable perovskite solar cells.

## Masters thesis

Title **Flow rate of emptying tanks**

Advisor *Dr. Michael Ndjinga,* CEA,Sacley,France

Description We simulated using finite volumes method, the efflux of fluid from reservoirs with outlets of different shapes. We developed schemes for synchronising flow rate of fluids from separate reservoirs, and applied results in controlling rubber latex and acid mixing process at a local rubber factory.

## Computer skills

Programming Languages: Python: ●●●●◐ FORTRAN ●●●●◐
C: ●●●○○ MATLAB ●●●●○

Molecular Modeling: VASP, Quantum ESPRESSO, LAMMPS, GROMACS

Molecular Visualisation: VMD, VESTA, OVITO, AVOGADRO, PyMOL

Concepts: Machine Learning, Parallelization, High Performance Computing

## Language skills

English: ●●●●●
French: ●●●●◐

## Publications

1. Sasmal, A., **Tendong, E.**, Saha-Dasgupta, T. and Chakrabarti, J., *Ligand-mediated interaction in a dispersion of lead-halide perovskites nanocubes : Implications on the self-assembly.* Physical Chemistry Chemical Physics journal, 2024. ***Submitted***

2. Mouassom, F., **Tendong, E.**, and Tamoffo, A. *Machine Learning Assisted Identification of Sea Surface Temperature Patterns Related to Extreme Rainfall Events over Cameroon.* International Journal of Climatology JOC-24-0125 , 2024. ***Under review***

3. **Tendong, E.**, Saha-Dasgupta, T. and Chakrabarti, J., 2022. *Viscoelastic response of fluid trapped between two dissimilar van der Waals surfaces.* Journal of Physics: Condensed Matter 34(19), p.195101.

4. **Tendong, E.**, Dasgupta, T.S. and Chakrabarti, J., 2020. *Dynamics of water trapped in transition metal oxide-graphene nano-confinement.* Journal of Physics: Condensed Matter, 32(32), p.325101.

5. Fouokeng, G.C., **Tendong, E.**, Tene, A.G., Tchoffo, M. and Fai, L.C., 2020. *Teleportation of single and bipartite states via a two qubits xxz Heisenberg spin chain in a non-Markovian environment.* Physics Letters A, 384(28), p.126719.

6. Tchoffo, M., Fouokeng, G.C., **Tendong, E.** and Fai, L.C., 2016. *Dzyaloshinskii–Moriya interaction effects on the entanglement dynamics of a two qubit XXZ spin system in non-Markovian environment.* Journal of Magnetism and Magnetic Materials, 407, pp.358-364..

## Awards and Achievements

2022 **BOSEFEST Prize for Best Oral presentation in Softmatter** , *S N Bose National Centre for Basic Sciences*, Kolkata, India

2019 **Royal Society of Chemistry Softmatter Oral presentation Prize**, *International Conference on Complex Fluids and Soft Matter* , CompFlu-2019,Bhopal, India

2017 **Beneficiary, Twas-Bose PhD fellowship** , *SN Bose National Centre for basic sciences* , Kolkata, India

2016 **Academic distinction**, *African Institute for Mathematical Sciences*, AIMS-Cameroon

2015 **Beneficiary, Next Einstein Scholarship**, *African Institute for Mathematical Sciences*, AIMS-Cameroon

## Conferences and workshops

2022 **BOSEFEST**, *Annual science festival at S N Bose National Centre for Basic Sciences*, Salt Lake, Kolkata India
Gave oral presentation titled "Viscoelastic response of fluid trapped between two dissimilar van der Waals surfaces"

2019 **International Conference on Complex Fluids and Soft Matter (CompFlu)**, Indian Institute of Science Education and Research, 5-7 Dec 2019, Bhopal, India
Gave oral presentation titled "Dynamics of water trapped in transition metal oxide-graphene nano-confinement"

2018 **International Conference on Complex and Functional Materials (ICCFM)**, *S N Bose National Centre for Basic Sciences, 13-16 Dec 2018*, Kolkata, India
Presented Poster titled "Dynamics of asymmetrically confined simple liquids"

## Referees

**Prof. Tanusri Saha-Dasgupta** , Centre Director: SN Bose National Centre for Basic Science, Kolkata, India.

Email: **tanusri@bose.res.in** Tel: (+91) 98 31 20 95 92

**Prof. Jaydeb Chakrabarti** SN Bose National Centre for Basic Science, Kolkata.

Email: **jaydeb@bose.res.in** Tel: (+91) 94 33 86 74 93

**Prof. Mama Foupouagnigni**, Centre President: African Institute for Mathematical Sciences, Cameroon. Email: **mfoupouagnigni@aims-cameroon.org**