

Teacher's Profile

Name: Dr. Sharmistha Dutta Dhatt
Department: Chemistry Department
Contact : 9163402267; Email: pcsdhatt@gmail.com
Specialization: Physical Chemistry
Joined Sarsuna College: 01/02/2014



- **Academic Qualification**

PhD University of Calcutta
Thesis Title: PERTURBATIVE AND RELATED METHODS IN CHEMICAL THEORIES
Post-Doc CSIR-RA , UGC- D.S.K Fellow

- **Additional Information:**

CSIR-UGC-NET (L.S) Qualified
CSIR-NET-JRF Qualified

- **Research Interest**

Perturbation Theory, Divergent Series, Fractional Calculus, Quantum Mechanics, Enzyme Kinetics,
Mathematical modeling, Stochasticity in chemical and biochemical reactions, Chemical Kinetics

- **Computer and software knowledge:** FORTRAN; MAPLE, OS-(LINUX/ WINDOWS),
MATHEMATICA, Force 2.0

Research Publications:

(xxii) **Unifying fractional and integer order derivative: A mathematical marvel**

S.Dhatt (Communicated) 2024

(xxi) **Gas phase kinetics of Hydrogen bromide formation as a chain reaction cycle: Deterministic and stochastic reconnaissance**

S. Dhatt, (communicated) 2024

(xx) **Substrate Inhibition versus Product feedback inhibition: In the perspective of single molecule enzyme kinetics**

S. Dhatt, M. Nandi, P. Chowdhury *Int. J. Chem Kin* 56 (3) 2021

(xix) Study of oscillatory dynamics in a Selkov glycolytic model using sensitivity analysis

S. Dhatt, P. Chowdhury *Ind J Phy* 96 (6) 2021

(xviii) Entner-Doudoroff glycolysis pathway as quadratic-cubic mixed autocatalytic network: A kinetic assay

S. Dhatt, S. Sen, P. Chowdhury *Chem. Phys* 2019.

(xvii) Efficacy of quasi-steady-state approximation in Michaelis-Menten kinetics: a stochastic signature

S. Dhatt, K. Banerjee, *J. Math. Chem*, 57, 2019.

(xvi) Exploring the antivenom kinetics and dosage: A mechanistic Investigation

S, Dhatt *J. Chem Sci & Engg* 2018.

(xv) How can we distinguish positive cooperativity from auto-catalysis in enzyme kinetics?

S, Dhatt, K. Banerjee, K. Bhattacharyya *J. Indian Chem. Soc* 2018

(xiv) Enzyme kinetics: A note on negative reaction constants in Lineweaver Burk Plot

S. Dhatt, K. Bhattacharyya *J. Indian. Chem. Soc*

(xiii) The Michaelis-Menten kinetics and errors in estimated reaction constants: A reappraisal

S, Dhatt, K. Banerjee, K. Bhattacharyya *J. Indian Chem. Soc* 2017

(xii) Suicide substrate kinetics revisited

S. Dhatt *J. Chem Sci* 2017.

(xi) Reliability of IC50 estimates for competitive inhibition kinetics

S. Dhatt (communicated) 2020

(x) Immune activation and immunodeficiency: a model reduction strategy

S. Dhatt *PNAS, India* 2017.

(ix) Enzyme Kinetics: A critique of the Quasi-Steady State-Approximations.

K. Bhattacharyya and S. Dhatt, *MATCH Commun. Math. Comput. Chem.* 70 (2013) 759-784

(viii) Accurate estimates of asymptotic indices via fractional calculus

S. Dhatt and K. Bhattacharyya, *J. Math. Chem.* DOI 10.1007/s10910-013-0258-0

(vii) Single-substrate Enzyme Kinetics: The Quasi-steady-state Approximation and beyond.

S. Dhatt and K. Bhattacharyya, *J. Math. Chem.* 51 (2013) 1467.

(vi) Asymptotic response of observables from divergent weak-coupling expansions: A fractional- calculus-assisted Padé technique.

S. Dhatt and K. Bhattacharyya, *Physical Review E* 86 (2012) 026711.

(v) Embedding Scaling Relations in Padé Approximants: Detours to Tame Divergent Perturbation Series.

S. Dhatt and K. Bhattacharyya, *Int. J. Quantum. Chem* 113 (2013) 916.

(iv) Infinite square well with a sinusoidal bottom: a candidate for the Klauder phenomenon?

S. Dhatt and K. Bhattacharyya, *J. Math. Chem.* 50 (2012) 9.

(iii) Surprises in nonlinear perturbations: Case of a multiple well potential problem.

S. Dhatt and K. Bhattacharyya, *Int. J. Quantum. Chem.* 112 (2012) 171.

(ii) Concurrent multiple-state analytic perturbation theory via supersymmetry.

S. Dhatt and K. Bhattacharyya, *J. Math. Phys.* 52 (2011) 042101.

(i) A perturbation theory without energy corrections.

S. Dhatt and K. Bhattacharyya, *Int. J. Quantum .Chem.* 111 (2011) 1950

Seminar/Workshop/Symposia / Conferences/others attended

1. 6th Regional Science and Technology Congress 2023-24: Shortlisted participants for Oral Presentation of Paper: Unifying fractional and integer order derivative: A mathematical marvel

2 International Symposium on Recent Advances in Chemistry and Material Sciences (2019): Department of Chemistry, – University of Calcutta:

3 International Symposium on Molecular Organisation and Complexity: A Chemical Perspective. (2013) – University of Calcutta (SINP –Kolkata).

4UGC Sponsored Seminar on Emerging Frontiers in Chemistry (2012)

Behala College (Kolkata)

5 International Symposium on Faces of Weak Interactions in Chemistry (2011)

University of Calcutta (SINP –Kolkata).

6 National Symposium on Recent Developments and Trends in Computational Chemistry (2010). North-Eastern Hill University (Shillong).

7 International Symposium on Frontiers of Functional Material (2009) –

University of Calcutta (SINP –CU).

8. Constructive Learning Environment in Science (2007) – I. E. W. (Kolkata)