

PRASHANTA KUMAR MANDAL, Ph.D.

Associate Professor
Department of Mathematics
Visva-Bharati

AREA OF RESEARCH INTEREST:

Biofluid dynamics, Computational fluid dynamics, Drug transport from drug-eluting-stent, Mathematical Ecology, Pattern Formation,

EDUCATION:

1992-1997 : Ph.D. (Mathematics), Visva-Bharati, Santiniketan-731 235, W.B., INDIA

Thesis Title: Some Analytical Studies on Biorheological Aspects of Blood Flow Through the Arteries Under Stenotic Conditions

1989-1991 : M.Sc.(Applied Mathematics), The University of Burdwan, W.B., INDIA

1985-1988 : B.Sc. (Honours in Mathematics): The University of Burdwan, W.B., INDIA

1983-1985: Higher Secondary (10+2): West Bengal Council of Higher Secondary Education, INDIA

1883 : Secondary : West Bengal Board of Secondary Education, INDIA

SELECTED PUBLICATIONS (Refereed):

I. Computational Biofluidynamics:

1.Sarifuddin, Chakravarty, S. and **Mandal, P.K. (2013)** “Numerical simulation of Casson fluid flow through differently shaped arterial stenoses”

Journal of Applied Mathematics and Physics (ZAMP), October 2013.

2. Sarifuddin, Chakravarty, S., **Mandal, P.K. (2013)** “Physiological flow of shear-thinning visco-elastic fluid past an irregular arterial constriction”, **Korea – Australia Rheology Journal, vol.-25, pp. 163-174.**

3. Sarifuddin, Chakravarty, S., **Mandal, P.K. (2013)** “Heat Transfer to Micropolar Fluid Flowing Through an Irregular Arterial Constriction”, **International Journal of Heat and Mass Transfer, vol.-56, pp. 538–551**

4. Ikbal, A, Chakravarty, S., **Mandal P K (2012)** “Unsteady Analysis of Viscoelastic Blood Flow through Arterial Stenosis” **Chemical Engineering Communications, vol.-199, pp.40-62.**

5. Ikbal, A, Chakravarty, S., Sarifuddin, **Mandal P K (2011)** “Numerical Simulation of Mass Transfer to Micropolar Fluid Flow Past a Stenosed Atery” **International Journal for Numerical Methods in Fluids, vol. 67, pp. 1655-1676.**

6. Mustapha, N, **Mandal, P.K,** Abdullah, I and Amin, N, Hayat, T. **(2011)** “ Numerical simulation of generalized Newtonian blood flow past a couple of irregular arterial stenoses”, **Numerical Methods for Partial Differential Equations, vol.-7, pp. 960-981.**

7. Mustapha, N, **Mandal, P.K,** Johnston, P R. and Amin (2010) “ A numerical simulation of unsteady blood flow through multi-irregular arterial stenosis,” **Applied Mathematical Modelling, 34, pp. 1559-1573.**

8. Ikbal, A, Chakravarty, S. and **Mandal. P.K. (2009)** “Two-layered micropolar fluid flow through stenosed artery: Effect of peripheral layer thickness,” **Computer and Mathematics with Applications, vol.-58, pp. 1328-1339.**

9. Mustapha, N, Chakravarty, S, **Mandal, P.K,** Amin, N. **(2009)** “Unsteady Magnetohydro dynamic blood flow through irregular multi-stenosed arteries”, **Computers in Biology and Medicine, vol.-39, pp. 896-906.**

10. Sarifuddin, Chakravarty, S., **Mandal, P.K. (2009)** “Effect of Heat and Mass Transfer to Blood Flow-Links to Atherosclerosis” **International Journal of Heat and Mass Transfer, vol-52, 5719-5730.**

11. Sarifuddin , Chakravarty, S., **Mandal, P.K. (2009)** “Effect of Asymmetry and Roughness of Stenosis on non-Newtonian Blood Flow Past an Arterial Segment” **International Journal of Computational Methods, vol-6, 1-28.**

12. Iqbal.A, Chakravarty, S.,Wong, K.,Mazumdar, J.and **Mandal. P.K. (2009)** “Unsteady Response of Non-Newtonian Blood Flow Through a Stenosed Artery in Magnetic Field.” **Journal of Computational and Applied Mathematics, vol-230, pp. 243-259.**

13.Sarifuddin, Chakravarty,S.,**Mandal, P. K.** and Andersson, H. I. (2009) “Mass Transfer to Blood Flowing Through Arterial Stenosis”, **Journal of Applied Mathematics and Physics (ZAMP), vol.- 60, no.-2, pp. 299-323.**

II. Drug transport

1.Effect of luminal flow and anisotropic diffusion on drug transport from DES (communicated).

2. Mathematical modelling of drug transport from half-embedded drug-eluting stent (communicated).

III. Pattern Formation

1.Guin, L. N., **Mandal, P.K. (2014)** “Spatiotemporal dynamics of reaction-diffusion models of interacting populations” ,**Applied Mathematical Modelling (accepted).**

2.Guin, L.N., Haque, M., Mandal, P.K. (2012) “The spatial pattern through diffusion-driven instability in a predator-prey model”, *Applied Mathematical Modelling*, vol. 36, pp. 1825-1841.

IV. Mathematical Ecology

1.Sarwardi,S.,Haque,M.,**Mandal, P.K. (2014)** “Persistence and global stability of Bazykin predator-prey model with Beddington De-Angeli response function”, **Communications in Nonlinear Science and Numerical Simulation, vol.-19, pp. 189-209.**

2. Pal, P J, **Mandal, P K** (2014) “Bifurcation analysis of a modified Leslie-Gower predator-prey model with Beddington-DeAngelis functional response and strong Allee effect” **Mathematics and Computers in Simulation**, vol.-97, pp. 123-146.

3. Pal, P J, Haque, M. , **Mandal, P K** (2013) “Dynamics of a predator-prey model with disease in the predator”, **Mathematical Models in the Applied Sciences**, **23 OCT 2013**, DOI: 10.1002/mma.2988.

4. Sarwardi, S., **Mandal, P.K.**, S.Ray (2013) “Dynamical behaviour of a two-predator model with prey refuge” **Journal of Biological Physics**, vol.-39, pp. 101-122.

5. Sarwardi, S., **Mandal, P.K.**, S.Ray (2012) “Analysis of a competitive prey-predator system with a prey refuge”, **Biosystems**, vol.- 110, pp. 133-148.

6. Sarwardi, S., Haque, M., **Mandal, P.K.** (2012) “ Ratio dependent predator-prey model of interacting population with delay effect.”, **Nonlinear Dynamics**, vol. 69, pp.817–836.

Ph.D. Students:

Past:

Arabinda Mandal (degree awarded in 2008)

Sarifuddin (degree awarded in 2009)

Asif Iqbal (degree awarded in 2011)

Sahabuddin Sarwardi (degree awarded in 2013)

Pallav J Pal (degree awarded in 2013)

Present:

1. Laksmi Narayan Guin

2. Akash Pradip Mandal

3. Ramprosad Saha

4. Benurkar Mondal

Research Collaboration:

1. Professor H I Andersson, Norwegian University of Science and Technology, Trondheim, Norway
2. Professor N Amin, Department of Mathematics, Universiti Teknologi Malaysia, Malaysia
3. Professor J Mazumdar, Department of Mathematics, The University of Adelaide, Australia
4. Professor P R Johnston, Department of Mathematics, Griffith University, Australia
5. Professor T Hayat, Quad-i-Azam University, Pakistan.
6. Dr Mainul Haque, University of Nottingham, UK