Akhilesh K. Sahu

Contact Information

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Department of Chemical Engineering
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Research Interests

Thin-film dynamics, Interfacial fluid mechanics, Hydrodynamic stability, Non-Newtonian flows, Computational fluid dynamics

Education

Doctor of Philosophy 2005-2010

Department of Chemical Engineering
Indian Institute of Technology Kanpur, INDIA

Master of Technology 2003-2005

Department of Chemical Engineering
Indian Institute of Technology Kanpur, INDIA

Bachelor of Engineering 1998-2002

Department of Chemical Engineering
Raipur Institute of Technology, Raipur, INDIA

Research Experience

University of Minnesota (Sept 2011-March 2013) Postdoctoral research
Project: Coating of discrete objects
Supervisor: Prof. Satish Kumar

IIT Kanpur PhD research
Project: Momentum and heat transfer characteristics of a square cylinder in power-law flow in laminar vortex shedding regime
Supervisors: Prof. R.P. Chhabra and Prof. V. Eswaran

IIT Kanpur MTech research
Project: Suppression of flow-induced interfacial instabilities by soft solid layer coatings
Supervisor: Prof. V. Shankar

Industrial Experience

Crompton Greaves Global R&D Center, Mumbai
Sr. Executive-Technology (Jan 2011 - Aug 2011)
Project: CFD and thermal analysis of motors

Teaching Experience

Birla Institute of Technology, Mesra, Ranchi

Visiting faculty (July 2013 - Sept 2013)

Assistant Professor (Sept 2013 - Feb 2014)

Graduate courses on Advanced transport phenomena-I and Advanced mathematical techniques in Chemical engineering

Undergraduate course on Process calculation and lab on Computer aided process engineering

IIT Kanpur

Graduate student instructor for Unit Operation Lab-I for Semester-II of the academic year 2005-2006 and 2006-2007 at Chemical Engineering department

Refereed Journal Publications

1. **Akhilesh K. Sahu** and S. Kumar, Thin liquid film flow over a topographically patterned cylinder, *Phys. Fluids.*, 26, 042102, doi: 10.1063/1.4869208, 2014.

2. A. Gode, **Akhilesh K. Sahu** and R.P. Chhabra, Two-dimensional steady flow over a semi-circular cylinder: Drag coefficient and Nusselt number, *Int. J. Adv. Eng. Sci. Appl. Math.*, 3, 44-59, 2012.

3. A. Prhashanna, **Akhilesh K. Sahu** and R.P. Chhabra, Two-dimensional flow of power-law fluids past an equilateral triangular cylinder, *Int. J. Thermal Sci.*, 50, 2027-2042, 2011.

4. P. Koteshwara Rao, **Akhilesh K. Sahu** and R.P. Chhabra, Momentum and heat transfer from a square cylinder in power-law fluids, *Int. J. Heat Mass Transfer,* 54, 390-403, 2011.

5. P. Koteshwara Rao, C. Sasmal, **Akhilesh K. Sahu** and R.P. Chhabra, Effect of power-law fluid behaviour on momentum and heat transfer characteristics of an inclined square cylinder in steady flow regime, *Int. J. Heat Mass Transfer*, 54, 2854 -2867, 2011.

6. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Effect of blockage on forced convection heat transfer from a heated square cylinder to power-law fluids, *Num. Heat Transfer,Part A*, 58, 641-659, 2010.

7. P. Koteshwara Rao, **Akhilesh K. Sahu** and R.P. Chhabra, Flow of Newtonian and power-law fluids past an elliptic cylinder, *Ind. Eng. Chem. Res.*, 49, 6649-6661, 2010.

8. M.K. Rao,**Akhilesh K. Sahu** and R.P. Chhabra, Effect of confinement on power-law fluid flow past a circular cylinder, *Poly. Eng. Sci.,* 51, 2044-2065, 2010.

9. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Two dimensional laminar flow of a power-law fluid across a confined square cylinder, *J. Non-Newtonian Fluid Mech.*, 165, 752-637, 2009.

10. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Forced convection heat transfer from a heated square cylinder to power-law fluids in the unsteady flow regime, *Num. Heat Transfer, Part A*, 56, 109-131, 2009.

11. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Two-dimensional unsteady laminar flow of a power-law fluid across a square cylinder, *J. Non-Newtonian Fluid Mech.*, 160, 157-167, 2009.

12. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Effects of Reynolds and Prandtl numbers on heat transfer characteristics of a square cylinder in the unsteady flow regime, *Int. J. Heat Mass Transfer,* 52, 839-850, 2009.

13. V. Shankar and **Akhilesh K. Sahu**, Suppression of instability in liquid flow down an inclined plane by a deformable solid layer, *Phys. Rev. E*, 73, 016301-1 - 016301-12, 2006.

Conference Publications

1. **Akhilesh K. Sahu** and S. Kumar**,** Coating of discrete object, *IPRMIE Annual Meeting*, May 2012, Minneapollis, USA.

2. **Akhilesh K. Sahu,** Prateek Jain, Kishor Joshi and Srinivas D., CFD analysis of an electric motor, ANSYS India user conference, October 2011, Pune, INDIA.

3. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Effect of non-Newtonian rheology on heat transfer from a square cylinder in unsteady flow regime, *20th National and 9th international ISHMT-ASME Heat and Mass Transfer Conference*, pp. 838-845, Mumbai, INDIA, Jan 2010.

4. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Two dimensional unsteady laminar flow of power law fluids across a square cylinder, *ASME International Mechanical Engineering Congress & Exposition - "Engineering a Better World",* Boston, Massachusetts, USA, October 31- November 6, 2008, IMECE2008-69261.

5. **Akhilesh K. Sahu**, R.P. Chhabra and V. Eswaran, Heat transfer from a square cylinder in unsteady flow regime, *60^{th} Annual Session of the Indian Institute of the Chemical Engineers, CHEMCON 2007*, Kolkata, INDIA, December 27 - 30, 2007.

Awards

- Most cited author in Numerical Heat transfer, Part A during 2008-2010 for the paper "Forced Convection Heat Transfer from a Heated Square Cylinder to Power-law Fluids in the Unsteady Flow Regime"
- Cash award for publication by students at IIT Kanpur, INDIA
- Academic excellence award during undergrad study

Workshop Attended

SERC school on "Rhelology of complex fluids" organized by IIT Bombay, INDIA, February 2008

DST-SERB school on "Evolutionary Techniques for the Optimization of Chemical Engineering Systems" organized by UPES Dehradun, INDIA, March 2014

Professional Skills

- Operating systems: Linux, Windows.
- Programming: FORTRAN, C.
- Software packages: FLUENT, CFX, Tecplot, Sigma Plot

Extra-Curricular & Non-Academic Achievements

- Won first position in Golden Jubilee Ultra Marathon at IIT Kanpur in 42 Km category
- Organized national level conference, ChEmference '08, for research scholars in Chemical engineering at IIT Kanpur

References

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