Chapters in Books

Published

1. O. Kuksenok, D. Deb, P. Dayal, A. C. Balazs, "Modeling Chemoresponsive Polymer Gels", Annu. Rev. Chem. Biomol. Eng., 5:35-54, 2014.
2. **P. Dayal**, O. Kuksenok, A. Bhattacharya, G. A. Buxton, O. B. Usta, A. C. Balazs*, Modeling the interaction of active cilia with species in solution: From chemical reagents to microscopic particles. In J. M. J. den Toonder, P. R. Onck (eds.), Artificial Cilia, RSC Nanoscience No. 30, 2012.
3. O. Kuksenok, **P. Dayal**, V. V. Yashin, A. C. Balazs*, Self-oscillating gels as stimuli- responsive Materials. In M. A. Urban (ed.), Handbook on Stimuli-Responsive Ma- terials, Wiley-VCH, Weinheim, Germany, 2011.
4. O. Kuksenok, V.V. Yashin, **P. Dayal**, A. C. Balazs*, Harnessing the attributes of self-oscillating gels to design biomimetic soft materials. In J. A. Pojman, Q. Tran- Cong Miyata (eds.), Nonlinear Dynamics with Polymers, Wiley-VCH, Weinheim, Germany, 2010.
5. O. Kuksenok, R. D. M. Travasso, **P. Dayal**, A. C. Balazs*, Modeling the self-assembly of ternary blends that encompass photosensitive chemical reactions: Cre- ating defect-free, hierarchically ordered materials. In A. I. Isayev (ed.), Encyclope- dia of Polymer Blends, Vol. 1, Wiley-VCH, Weinheim, Germany, 2010.

Papers in Refereed Journals

Published

1. D. Deb, O. Kuksenok, **P. Dayal**, A. C. Balazs*, Forming self-rotating pinwheels from assemblies of oscillating polymer gels. *Materials Horizons*, Sep 2013. (New Journal from Royal Society of Chemistry, impact factor not available)
2. O. Kuksenok, **P. Dayal**, A. Bhattacharya, V. V.Yashin, D. Deb, I. C. Chen, K. J. Van Vliet and A. C. Balazs*, Chemo-responsive, self-oscillating gels that undergo biomimetic communication. *Chemical Society Reviews*, 42, 7257, 2013. (Impact factor: 24.892)
3. **P. Dayal**, O. Kuksenok, A. C. Balazs*, Reconfigurable assemblies of active, auto- chemotactic gels. *Proceedings of National Academy of Sciences of USA*, 110, 431, 2013. (Impact factor: 9.737)
4. **P. Dayal**, O. Kuksenok, A. Bhattacharya, A. C. Balazs*. Chemically-mediated communication in self-oscillating, biomimetic cilia. *Journal of Materials Chemistry*, 22, 241, 2012. (Impact factor: 6.101)
5. V. V. Yashin, O. Kuksenok, **P. Dayal**, A. C. Balazs*. Mechano-chemical oscillations and waves in reactive gels. *Reports on Progress of Physics*, 75, 066601, 2012. (Impact factor: 13.857)
6. I. R. Epstein*, V. K. Vanag, A. C. Balazs, O. Kuksenok, **P. Dayal**, A. Bhattacharya. Chemical oscillators in structured media. *Accounts of Chemical Research*, 45, 2160, 2012. (Impact factor: 20.833)
7. **P. Dayal**, O. Kuksenok, V. V. Yashin, A. C. Balazs*. Copying from nature: Design- ing adaptive, chemo-responsive gels. *Journal of Polymer Science Part B: Polymer Physics*, 48, 2533, 2010. (Impact factor: 2.221)
8. **P. Dayal**, O. Kuksenok, A. C. Balazs*. Designing autonomously motile gels that follow complex paths. *Soft Matter*, 6, 768, 2010. (Impact factor: 3.909)
9. **P. Dayal**, O. Kuksenok, A. C. Balazs*. Using light to guide the self-sustained motion of active gels. *Langmuir*, 25, 4298, 2009. (Impact factor: 4.187)
10. **P. Dayal**, O. Kuksenok, A. C. Balazs*. Forming ordered structures in ternary photo-sensitive blends through the use of masks. *Soft Matter*, 5, 1205 (2009). (Im- pact factor: 3.909)
11. **P. Dayal**, O. Kuksenok, A. C. Balazs*. Using a single mask to create multiple patterns in three-component, photo-reactive blends. *Langmuir*, 24, 1621, 2008. (Impact factor: 4.187)
12. P. Rathi, T.-M. Huang, **P. Dayal**, T. Kyu*, Crystalline-amorphous interaction in relation to the phase diagrams of binary polymer blends containing a

crystalline constituent. *Journal of Physical Chemistry B*, 112, 6460, 2008. (Impact factor: 4.814)

13. **P. Dayal**, J. Liu, S. Kumar, T. Kyu*, Experimental and theoretical investigations of porous structure formation in electrospun fibers. *Macromolecules*, 40, 7689, 2007. (Impact factor: 5.521)

14. **P. Dayal**, T. Kyu*, Dynamics and morphology development in electrospun fibers driven by concentration sweeps. *Physics of Fluids*, 19, 107106, 2007. (Impact factor: 1.722)

15. **P. Dayal**, A. J. Guenthner, T. Kyu*, Morphology development of main-chain liquid crystalline polymer fibers during solvent evaporation. *Journal of Polymer Science, Part B: Polymer Physics*, 45, 429, 2007. (Impact factor: 2.221)

16. **P. Dayal**, T. Kyu*, Morphology development in polymer fibers undergoing solvent/non- solvent exchange. *Macromolecular Symposia*, 258, 170, 2007. (Impact factor: 0.913)

17. **P. Dayal**, R. Matkar, T. Kyu*, Crystal–liquid crystal binary phase diagrams. *Jour- nal of Chemical Physics*, 124, 224902, 2006. (Impact factor: 3.164)

18. **P. Dayal**, T. Kyu*, Porous fiber formation in polymer-solvent system undergoing solvent evaporation. *Journal of Applied Physics*, 100, 4, 043512, 2006. (Impact factor: 2.064)

19. A. J. Guenthner, S. Khombhongse, W. Liu, **P. Dayal**, D.H. Reneker, T. Kyu*, Dynamics of hollow nanofiber formation during solidification subjected to solvent evaporation. *Macromolecular Theory and Simulations*, 15, 87, 2006. (Impact factor: 1.606)

20. **P. Dayal**, T. Kyu*, Structure evolution in polymer fibers during solvent evapora- tion. *Polymer Preprints*, 47, 572, 2006. (Impact factor: Not Available)

Invited Lectures (Outside the Institute) and Invited Conference Presentations

1. **P. Dayal**, Chemo-mechanical oscillations in photosensitive, self-oscillating polymer, Indian Institute of Technology Bombay (IITB), 27th September 2013.

2. **P. Dayal**, Opportunities at Indian Institute of Technology Gandhinagar, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, 10th April 2013.

3. **P. Dayal**, Locomotion of self-oscillating polymer gels, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, 10th April 2013.

4. **P. Dayal**, Negative-phototaxis and auto-chemotaxis in self-oscillating polymer gels, Kachch University, Bhuj, 22nd March 2013.

5. **P. Dayal**, Self-oscillating polymer gels that move: Negative-phototaxis and auto- chemotaxis, Navyug Science College, Surat, 2nd January 2013.

6. **P. Dayal**, Photo-induced locomotion of active polymer gels, Invited talk at Depart- ment of Chemical Engineering, Indian Institute of Science-Bangalore (IISc), 15th September, 2011.

7. **P. Dayal**, Photo-induced locomotion of self-oscillating polymer gels, Invited talk at Department of Chemical Engineering, Indian Institute of Technology-Kanpur (IIT-K), 9th September, 2011.

8. **P. Dayal**, Active self-oscillating polymer gels that follow complex paths, Invited talk at Department of Chemical Engineering, Indian Institute of Technology-Gandhinagar (IIT-Gn), 1st September, 2011.

9. **P. Dayal**, Modeling active self-oscillating gels that follow complex paths, Invited talk at Department of Chemical Engineering, Indian Institute of Technology-Bombay (IIT-B), 15th June, 2011.

10. **P. Dayal**, Designing Active Biomimetic Systems using Self-Oscillating Polymer Gels, Invited talk at International Symposium on Stimuli-Responsive Materials, 26th October, 2010.

11. **P. Dayal**, Training nocturnal self-oscillating gels to follow complex paths, Invited talk at Department of Chemical, Materials and Biomolecular Engineering, Univer- sity of Connecticut, 4th March, 2010.

12. **P. Dayal**, Dynamics and Morphology Development during Electrospinning Process, Invited talk at Department of Chemical and Materials Engineering, University of Cincinnati, 15th February, 2007.

Contributed (Non-Invited) Papers/Abstracts at Conferences

Oral

1. **P. Dayal**, Dynamics of self-oscillating cilia designed from active polymer gels, APS March meeting, Boston-MA, 2011.
2. **P. Dayal**, Active ciliated surfaces from self-oscillating polymer gels, MRS November meeting, Boston-MA, 2011.
3. **P. Dayal**, Harnessing self-oscillating polymer gels to design active ciliated surfaces, APS March meeting, Dallas-TX, 2011.
4. **P. Dayal**, Designing synthetic self-oscillating cilia using active polymer gels, AIChE Annual meeting, Salt Lake City-UT, 2010.
5. **P. Dayal**, Designing Autonomously Motile Gels that Follow Complex Paths, APS March meeting, Portland-OR, 2010.
6. **P. Dayal**, Harnessing Light to Guide the Motion of Chemo-Responsive Polymer Gels, AIChE Annual meeting, Nashville-TN, 2009.
7. **P. Dayal**, Photo-directed motion of chemo-responsive polymer gels, MRS April meeting, San Francisco-CA, 2009.
8. **P. Dayal**, Photo-induced locomotion of chemo-responsive polymer gels, APS March meeting, Pittsburgh-PA, 2009.
9. **P. Dayal**, Creating defect free structures by directed photochemical reaction in a ternary phase separating system, APS March meeting, New Orleans-LA, 2008.
10. **P. Dayal**, Binary phase diagrams of liquid crystal/polymer systems exhibiting crys- tal, smectic and nematic transitions, APS March meeting, Baltimore-MD, 2006.
11. **P. Dayal**, Structure evolution in polymer fibers during solvent evaporation, ACS March meeting, Atlanta-GA, 2006.

Posters

12. **P. Dayal**, Chemotaxis of active, self-oscillating polymer gels in solution, APS March meeting, Boston-MA, 2011.
13. **P. Dayal**, Criteria for chemo-mechanical oscillations in photosensitive, self-oscillating polymer gels, MRS Nov. meeting, Boston-MA, 2011.
14. **P. Dayal**, Designing self-oscillating cilia using active polymer gels, APS March meeting, Dallas-TX, 2011.

15. **P. Dayal**, Harnessing light to control the autonomous functionality of soft active materials, CMMI conference, Atlanta-GA, Jan 2011.

16. **P. Dayal**, Stability analyses of the model for responsive gels undergoing photosen- sitive Belousov-Zhabotinsky reaction, APS March meeting, Portland-OR, 2010.

17. **P. Dayal**, Effect of light attenuation on the motion of photo-responsive polymer gels, APS March meeting, Pittsburgh-PA, 2009.

18. **P. Dayal**, Photo-induced locomotion of chemo-responsive polymer gels, AIChE Annual meeting, Philadelphia-PA, 2008.

19. **P. Dayal**, Photopatterning in phase separating reactive ternary systems, APS March meeting, New Orleans-LA, 2008.

20. **P. Dayal**, Structure formation during solidification subjected to solvent evapora- tion, PPS June meeting, Akron-OH, 2004.