

The 49th meeting of the Society for Natural Philosophy
and an IMA Participating Institutions Conference

**Coupled Processes in Continuum Mechanics Motivated by Biological
Phenomena**

Kellogg Hotel and Conference Center
Michigan State University
East Lansing, MI
Oct. 7 - 9, 2011

October 7, Friday

- 1:30-2:00 Registration (just outside room 105, which is the venue for all talks).
- 2:00-2:10 Welcoming Address
- 2:10-3:10 Invited Talk 1 *Walk this way: Locomotion of kinesin along microtubules,*
Peter Bates (*Michigan State*)
- 3:10-3:30 *Coffee Break*
- 3:30-4:30 Invited Talk 2 *Interactions of nanoparticles with biological systems,* Angela
Violi (*U. Michigan*)
- 4:30-4:50 *Coffee Break*
- 4:50-5:15 Round Table 1 *Residual stress and the principle of optimal operation of*
arteries, Yi-chao Chen (*U. Houston*)
- 5:15-5:40 Round Table 2 *A constitutive model for active-passive transition of muscle*
fibers, Luis Dorfmann (*Tufts*)
- 5:45-7:30 Reception: The Corniche Room, Kellogg Center (upstairs)

October 8, Saturday

- 8:15-9:00 *Light Breakfast Snacks* (room 105, which is the venue for all talks).
- 8:30-9:00 Registration
- 9:00-10:00 Invited Talk 3 *Nonlinear elasticity and biology: Rotation, inversion, and perversion*, Alain Goriely (*Oxford U.*)
- 10:00-10:20 *Coffee Break*
- 10:20-11:20 Invited Talk 4 *Counterion condensation on polyelectrolytes: Big effects from small causes*, Gerald Manning (*Rutgers –emeritus*)
- 11:20-11:40 *Coffee Break*
- 11:40-12:05 Round Table 3 *Riemannian geometry of bulk growth*, Arash Yavari (*Georgia Tech*)
- 12:05-12:30 Round Table 4 *Evolution of incompatibility during growth*, Anurag Gupta (*I.I.T.-Kanpur*)
- 12:30-2:00 Lunch – *you are on your own.*
- 2:00-3:10 The Clifford Ambrose Truesdell III Lecture *Myths in the Classical Field Theory*, Gianfranco Capriz (*U. Pisa*)
- 3:10-3:30 *Coffee Break*
- 3:30-3:55 Round Table 5 *Constitutive models of brain neuromechanics*, Corina Drapaca (*Penn State*)
- 3:55-4:20 Round Table 6 *Theory on bending and twisting of ribbons and multi-stability*, Zi Chen (*Princeton*)
- 4:20-4:40 *Coffee Break*
- 4:40-5:40 Invited Talk 5 *Polyelectrolyte gels: Modeling, analysis and biological applications*, Carme Calderer (*U. Minnesota*)
- 6:30-9:30 Dinner Banquet *Beggar's Banquet*, (218 Abbott Rd., East Lansing)

October 9, Sunday

- 8:15-9:00 *Light Breakfast Snacks* (room 105, which is the venue for all talks).
- 9:00-10:00 Invited Talk 6 *Modeling inflammation and growth of an atherosclerotic lesion: A coupled field problem on many time scales*, Jay Walton (Texas A&M)
- 10:00-10:20 *Coffee Break*
- 10:20-11:20 Invited Talk 7 *From discrete to continuum: kinetic relations and beyond*, Anna Vainchtein (U. Pittsburgh)
- 11:20-11:40 *Coffee Break*
- 11:40-12:05 Round Table 7 *Thermodynamics basis of rigidity sensing at biological interfaces*, Alireza Sarvestani (U. Maine – Orono)
- 12:05-12:30 Round Table 8 *On continuum mechanics formulations that model active cellular mechanosensing*, Seungik Baek (Michigan State)
- 12:30-12:40 Closing Remarks