



Program Updates

- **Paper HP10** [Monday, 10:45, San Carlos I (Track 4)] has been cancelled.
- **Paper HP12** [Monday, 11:25, San Carlos I (Track 4)] will be moved to the **10:45** time slot.
- The author list of **Paper MP9** [Monday, 3:10, Ferrante I-III (Track 6)] has been changed:
Transient coating of the inner wall of a straight tube with a viscoelastic material
Yannis Dimakopoulos, Michael Pavlidis, and [John Tsamopoulos](#)
Chemical Engineering, University of Patras, Patras 26500, Greece
- **Paper HS14** [Monday, 4:50, San Carlos IV (Track 1)] will be presented by [P. Hine](#).
- **Paper HP37** [Tuesday, 9:45, San Carlos I (Track 4)] will be presented by [Seong Hyun Yoo](#).
- **Paper MF18** [Tuesday, 10:25, Portola (Track 11)] has been replaced by:
Transverse diffusive broadening in pressure driven microchannels: A lattice Boltzmann study of the scaling laws
[Segun G. Ayodele](#), Fathollah Varnik, and Dierk Raabe
Max-Planck Institut fuer Eisenforschung, Duesseldorf D-40237, Germany
We study the scaling laws characterizing the inter-diffusive zone of two fluids flowing side by side in a Y-shape laminar micromixer using the lattice Boltzmann method. The lattice Boltzmann method solves the coupled 3D hydrodynamics and mass transfer equations and incorporates all intrinsic features of 3D flows related to this problem. We observe different power law regimes occurring at the center of the channel and close to the top/bottom wall. The extent of the inter-diffusive zone scales as the square root of the axial distance at the center of the channel, while at the top/bottom wall we find an exponent 1/3 which occurs at the early stage of mixing between the two fluids and finally changing to 1/2 at a later stage downstream. We analyze the effect of Peclet number, channel aspect ratio and volumetric flow rate on the extent of the diffusive broadening and the point at which the exponent 1/3 characterizing the broadening at the top/bottom wall reverts to the normal diffusive behavior downstream.
- **Paper SG26** [Tuesday, 3:50, San Carlos II (Track 2)] has been replaced by:
Surface relaxation in glassy polymers
[James A. Forrest](#), Zahra Fakhraei, and Dongping Qi
Department of Physics and Astronomy, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada
We present results for relaxation of the first few nm of the surface of glassy polymers polystyrene (PS) and isotactic polymethylmethacrylate (i-PMMA). The relaxation is studied by measuring the relaxation of nanodeformations produced by first partially embedding gold nanospheres, and then removing the spheres with Mercury. For PS, the measurements are done over an extended temperature range from near the bulk glass transition ($T_g(\text{bulk})$) to a temperature 130K below this value. Surface relaxation on the nm scale is observed at all temperatures. The temperature dependence of the measured relaxation times is similar to bulk near $T_g(\text{bulk})$ but becomes much weaker at lower temperatures. The temperature dependence becomes so weak that there is no discernible difference between relaxation times at 323K and 240K. For the case of i-PMMA enhanced surface relaxation is also observed, but in this case there is a marked dependence on the film thickness and the substrate on which the film is made. For very thick films, there is also a linear dependence on the M_w value of the polymer.
- **Paper PO37** [Tuesday, 6:00, Serra I (Poster Session)] will be presented by [Oliver G. Harlen](#).
- **Paper PO175** [Tuesday, 6:00, Serra I (Poster Session)] has been replaced by:
The effects of chain conformation in the microfluidic entry flow of polymer-surfactant systems
[Erik Miller](#) and Justin J. Cooper-White
Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Queensland 4072, Australia
An associative polymer-surfactant system has been used to observe the effects of chain conformation in the entry flow through a microfabricated planar 16:1:16 contraction-expansion geometry. The well-studied system of the flexible polymer poly(ethylene oxide) (PEO) and anionic surfactant sodium dodecyl sulfate (SDS) was used. Dilute polymer solutions with increasing SDS concentration were characterized in steady and dynamic shear, as well as capillary breakup extensional rheology. Based on this characterization, the primary quantitative difference is an increase in zero-shear viscosity as a result of the PEO chain expansion brought on by association of SDS surfactant micelles. However, these quantitatively similar solutions were observed to exhibit much more qualitatively different flow patterns via fluorescent streak imaging in the entry flow. In contrast to previous work, the PEO-SDS systems were observed to transition to a steady viscoelastic flow regime characterized by stable lip vortices at much lower Elasticity and Weissenberg numbers than PEO polymer solutions alone. The resulting insight gained regarding the utility of microfluidic flows in elucidating effects of subtle conformational changes further illustrates the potential for using microfabricated devices as rheometric tools for measuring the properties of dilute and weakly viscoelastic fluids.
- **Papers PO131, PO178 and PO238** [Tuesday, 6:00, Serra I (Poster Session)] have been cancelled.
- **Paper HP57** [Wednesday, 11:25, San Carlos III (Track 3)] has been cancelled.
- **Paper MP63** [Friday, 10:25, Colton I-III (Track 6)] has been cancelled.
- **Paper MP64** [Friday, 10:45, Colton I-III (Track 6)] will be moved to the **10:25** time slot. The paper will be presented by [Gerrit W. Peters](#).
- The paper to be presented by [John R. de Bruyn](#) [originally **Paper CG25**, Friday, 10:45, San Carlos I (Track 7)] is now **Paper CG22** [Friday, 9:45, San Carlos I (Track 7)].
- The paper to be presented by [Alexandre Ragouilliaux](#) [originally **Paper CG22**, Friday, 9:45, San Carlos I (Track 7)] is now **Paper CG25** [Friday, 10:45, San Carlos I (Track 7)].