

Meeting: 1001, Evanston, Illinois, SS 4A, Special Session on Fluid Dynamics, Diffusion and Reaction

1001-35-255 **Alexander Kiselev***, Department of Mathematics, University of Wisconsin, 480 Lincoln drive,
Madison, WI 53706. *Quenching of combustion by fluid flow.*

I will discuss a simple combustion model given by reaction-diffusion equation with passive advection. If the reaction has ignition threshold, there is a chance of quenching, where joint effects of diffusion and fluid flow quickly dissipate the initial hot region so that reaction ceases. Strong fluid flow can greatly facilitate this process; the efficiency of quenching depends strongly on the geometry of the flow. I will describe recent results for the cases of shear and cellular flows. The talk is based on joint works with Albert Fannjiang, Lenya Ryzhik and Andrej Zlatos. (Received August 27, 2004)