Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Analysis of the reaction advection diffusion system for DNA hybridization in a microchannel THOMAS JOHN, IGOR MEZIC, University of California, Santa Barbara — We consider the hybridization of short strand DNA in microchannels and model it as a reaction advection diffusion system in an extended space consisting of spatial dimensions as well as orientation. The model can be used to optimize the hybridization rate. We demonstrate with a shear superposition micromixer that it is possible to achieve chaotic mixing in space while simultaneously aligning the strands, thus increasing the rate of creation of double strand DNA.

Igor Mezic
University of California, Santa Barbara

Date submitted: 15 Aug 2005   Electronic form version 1.4