1077-92-145　　　**Michael Malisoff*** (`malisoff@lsu.edu`), Department of Mathematics, 303 Lockett Hall, Louisiana State University, Baton Rouge, LA 70803-4918. *Stability and Stabilization for Chemostat Models: A Survey.*

The chemostat is a bioreactor in which fresh medium is continuously added and culture liquid is continuously removed, so the culture volume remains constant. It has industrial applications, including the commercial production of genetically altered organisms. Chemostat models are used in bioengineering and population biology, e.g., for experimentally reproducing and understanding the behaviors of interacting organisms in lakes and waste-water treatment plants. I will summarize my work with Frederic Mazenc on nonlinear control methods for ensuring coexistence in chemostats with multiple species and one or more limiting substrates. Our work uses Lyapunov functions and feedback controller design and can capture the effects of actuator errors, feedback delays, and model uncertainty. (Received September 22, 2011)