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1003-92-1473 **Wei-Ming Ni** and **Moxun Tang*** (tang@math.msu.edu), Department of Mathematics, Michigan State University, East Lansing, MI 48823. *Pattern formation in nonlinear chemical reaction systems.*

Understanding the mechanisms by which patterns are created in the living system poses one of the most challenging problems in developmental biology. In 1952, Alan Turing suggested in his celebrated paper "chemical basis for morphogenesis" that chemical reactions, with appropriate nonlinear kinetics coupled to diffusion, could lead to the formation of stationary patterns of the type appeared in living organisms. Turing's mechanism is considered to be a central source for the occurrences of coherent patterns in far-from-equilibrium systems, and has been applied in a variety fields in biology and chemistry. The first experimental evidence of Turing pattern was observed in 1990, nearly 40 years after Turing's prediction, by the Bordeaux group in France on the chlorite-iodide-malonic acid-starch (CIMA) reaction in an open unstirred gel reactor. In this talk I will describe some fundamental properties of Turing patterns, through our mathematical analysis for the Lengyel-Epstein model, a two-variable reaction diffusion system which captures the key feature of the CIMA reaction. (Received October 05, 2004)