1005-35-121 **Ivar Stakgold***, Department of Mathematical Sciences, Newark, DE 19716. *Finite-time Conversion for Gas-Solid Reactions.*

The equations governing a gas-solid reaction form a semilinear system consisting of a parabolic partial differential equation for the gas concentration coupled with an ordinary differential equation for the solid concentration. For fractional pwer-law reaction rates, the solid is fully converted to products in finite time. Estimates for this time will be obtained from an analysis of the semilinear system and its equivalent nonlinear integral equation formulation. (Received February 03, 2005)