1100-37-238 **Patrick Shipman*** (shipman@math.colostate.edu), 1874 Campus Delivery, Colorado State University, Fort Collins, CO 80523-1874, and **Stephen Thompson**. *Patterns and Oscillations: Dynamics and Fractals in Vapor-to-Particle Reaction Zones.*

We report on a set of topochemically organized, nanoparticulate experimental systems in which vapor diffuses and convects to form spatially defined reaction zones. In these zones, a sequence of catalyzed protron-transfer, nucleation, growth, aggregation, andcharging processes, produce rings, tubes, spirals, pulsing crystals, oscillating fronts, "microtornadoes," fractal structures, and patterns such as Liesegang rings. We mathematically analyze these structures using reaction-diffusion-convection models and reductions to dynamical systems. (Received February 09, 2014)