

### 330f Chemistry and Physics at Small Scales and in Complex Geometries

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New phenomena and micro/nano structures emerge when chemical processes occur in microscopic environments of complex shapes. Our Wet Stamping (WETS) technique allows unprecedented control over diffusional fluxes and chemical reactions at the microscale. The technique is used to control formation of both static and dynamic self-organized patterns, to evolve microscopic patterns into nanoscopic ones, to resolve crystal formation at sub-micrometer lengths, and to induce and propagate chemical waves emanating from arrays of micro-oscillators. New phenomena such as nanoscale periodic precipitation, symmetry breaking of reaction-diffusion fronts and autofocusing of chemical waves are discussed. In addition, WETS provides a basis for several applications in materials science ranging from one-step, reaction-diffusion fabrication of microfluidic devices and optical elements, through reactive micropatterning of surfaces, to microetching and doping of solid materials (metals, glasses and polymers).

