

# THE FLUID DYNAMICS OF LEVITATED PROTEIN SOLUTION DROPLET

E.H. Trinh and S.K. Chung  
Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, CA USA

## ABSTRACT

To be Presented at the 1997 American Physical Society Meeting  
Kansas City, MO, March 17-21, 1997

Experimental evidence and theoretical insight suggest that the flow field around a crystal growing out of solution play an important role in determining its growth kinetics and final morphology. Although no comprehensive theory exists today which could be used to directly correlate macroscopic fluid dynamical characteristics to growth kinetics and crystal quality, an empirical approach aiming to observe the results of controlled variations in the flow field could provide useful information. In the area of large molecule crystallization via vapor transport, the challenge lies in the control of the numerous observable characteristics such as supersaturation, growth and nucleation rates by adjusting external parameters such as the temperature, the pH level, the humidity level, and the vibrational background. The use of totally free levitated solution droplets under the appropriate environment constraints and under the scrutiny of light scattering or spectroscopic diagnostics is a potentially fruitful approach. Progress of ongoing research using electrostatically levitated solution droplets under temperature and humidity control and under rotation along a horizontal axis will be presented and discussed, [Work supported by NASA].

---