Supervisor: Sanjeev Chandra
Title: Interaction of bubbles, drop, and particles on thin liquid films
Description:
Interaction of particles is of growing interest in many industrial applications such as application of paints and polymer coatings and other areas of material processing; for instance in stabilize foams and emulsions and for manipulating the surface features of materials.
Our laboratory has developed an experimental approach to alter and control the motion of particles by manipulating the curvature of the liquid-air interface. Additional experimental procedures and equipment are being developed to create bubbles and droplets with controlled sizing. The aim of this study is to achieve and alter predictable patterns formed by a system of interacting drops and particles.
Understanding the forces affecting the motion of floating and immersed particles will help

Supervisor: Sanjeev Chandra
Title: Bubble entrapment under impacting liquid droplets on glass substrates
Description:
When paint is sprayed on a surface, a large number of air bubbles may be entrained by impacting droplets and trapped in the deposited layer. This is a well-known problem and several "de-foaming agents" are commercially available, which are typically surfactants that are added to water-based paints to reduce surface tension and allow bubbles to burst through the paint layer and escape. Therefore it is important to understand the dynamics behind bubble entrapment and the effect of parameters such as bubble diameter and viscosity on the process.

The aim of this project is to develop an experimental procedure to take high speed close-up videos on impacting drops on glass substrates and determine the effect of droplet size and physical properties on the process.