Radiation-pressure-induced capillary waves. R. Glynn Holt, Eugene H. Trinh (Microgravity Research Group, Mail Stop 183-401, Jet Propulsion Laboratory, 4800 Oak Grove Dr., Pasadena, CA 91109)

Capillary waves are often observed on the surface of acoustically levitated drops, bubbles and shells. We have investigated the onset and parameter dependences of such waves on bubbles anti shells. Via video and light scattering we have established that the mechanism for converting the acoustic energy into wave motion is the Faraday instability. Measurements of pattern formation, fluctuation and transition will be presented, as well as investigations of temporal dynamics. In particular, the transition to spatiotemporal chaos and/or turbulence is investigated. The shell is the primary "laboratory" for turbulence, since, for certain wall thicknesses and levitation pressures, the entire surface becomes covered with apparently turbulent capillary waves, accompanied by a reduction oft hc gravit y-induced pooling. Wc discuss the potential uses of this knowledge to produce more uniform coatings in certain applications. [Work supported by NASA]

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