

Abstract Submitted  
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**Optical Tweezer Studies of Liquid Crystals Using Multiple Optical Traps** APICHART PATTANAPORKRATANA, Department of Physics and Ferroelectric Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309, U.S.A, CHEOL S. PARK TEAM, JOSEPH MACLENNAN TEAM, NOEL A. CLARK TEAM — We have constructed an acousto-optically scanned CW YAG laser system to generate dynamically controllable multiple optical traps. This multiple optical tweezer is being employed to probe the static and dynamic interactions of defects and textures in two and three dimensional liquid crystal (LC) systems. Results will be presented on 2D systems, where interactions between islands, thicker circular regions on few-layer thick freely suspended liquid crystal (LC) films, have been studied in the smectic C phase, in which the islands interact via the c-director orientation field. In the Smectic A phase, it has been found that the elastic interactions between islands are much smaller than in the Smectic C, and it is easy to induce coalescence using the optical tweezers. Studies of motion of suspended particles in 3D nematics and smectics will also be presented. \*This research is supported by NASA Grant NAG3-2457, and NSF MRSEC Grant DMR 0213918

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