

Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

Radiation Force induced Liquid Flow within a Homogeneous Medium HONGGU CHOI, BORAM JOO, JEONG JISUNG, KYUNGHWAN OH, Yonsei Univ, YONSEI UNIV COLLABORATION — The visualization of optical force required refractive index inhomogeneous boundary, or absorption to generate radiation pressure. However, the dilute liquid medium with low attenuation coefficient is affected by light carrying momentum, and generated flow. The optical force density within a dielectric medium oscillates, and their time averaged value was regarded as a vanishing parameter, however the existence of light carrying momentum within a dielectric media generates material momentum density and it results localized liquid flow. We used 980nm fiber laser source guided along HI1060 single mode fiber which guides localized single mode Poynting vector, in order to generate effectively measureable radiation pressure during light propagation within deionized water. The micro beads with 2 micrometer diameter were deployed to visualize the flow and their location was out of beam to reject the effect of radiation pressure at the refractive index inhomogeneity between water and polymer beads.

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Date submitted: 30 Jan 2015

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