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Formation of Lenses by Liquid Interfacial Surfaces CHARLOTTE ZIMMERMAN, BENJAMIN CERJAN, MARTHA-ELIZABETH BAYLOR, Carleton College — In this study, we examined the geometry of polymer lenses formed by liquid interfacial surfaces. We formed lenses by dropping hydrophobic photocurable monomer on the surface of various hydrophilic liquid substrates. Due to intermolecular forces between the monomer and the substrate liquid, the interface is pulled into a curved shape. Upon exposure to UV light, the monomer solidifies while maintaining the boundary interface. The result is a plano-convex, optically-smooth polymer lens. The interfacial surface tension is manipulated by altering the amount of thin film present on the surface of the hydrophilic liquid, producing lenses of different curvatures. The lens curvature is further modified by using various salts that change the polarity of the substrate solution. We will present data demonstrating modification of the lens shape due to specific changes made to the physical and chemical properties of the hydrophilic liquid. We believe this liquid interfacial fabrication technique offers an alternative to current molding techniques for forming polymer lenses.

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