

Abstract Submitted
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Morphological Characterization of Silicone Hydrogels SAMUEL GIDO, University of Massachusetts Amherst — Silicone hydrogel materials are used in the latest generation of extended wear soft contact lenses. To ensure comfort and eye health, these materials must simultaneously exhibit high oxygen permeability and high water permeability / hydrophilicity. The materials achieve these opposing requirements based on bicontinuous composite of nanoscale domains of oxygen permeable (silicones) and hydrophilic (water soluble polymer) materials. The microphase separated morphology of silicone hydrogel contact lens materials was imaged using field emission gun scanning transmission electron microscopy (FEG-STEM), and atomic force microscopy (AFM). Additional morphological information was provided by small angle X-ray scattering (SAXS). These results all indicate a nanophase separated structure of silicone rich (oxygen permeable) and carbon rich (water soluble polymer) domains separated on a length scale of about 10 nm.

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