

Abstract Submitted
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Undergraduate Reseach in Color Center Production and Photodegradation using Retroreflecting Glass Beads EVERETT KYSOR, RUSSELL HARKAY, Keene State College — A project has been initiated at Keene State in which UV light from a Deuterium arc lamp is used to produce or bleach color centers in a wide variety of materials, including reflective glass beads used for highway marking, alkali halides, and other transparent materials. The glass beads have a very high refractive index due to the inclusion of metallic impurities. Practical applications include varying the refractive index of a material by adding or bleaching (neutralizing) color centers, which are, in themselves, in interesting manifestation of the particle-in-a-box problem encountered in modern physics. Another practical outcome of the ongoing project is to determine the overall effect of exposure to UV light on the transmission and optical parameters of materials normally exposed to sunlight. As a sidebar experiment, work was performed in which micron-size glass beads were used to simulate two-dimensional arrays with a laser playing the role of x-rays in forming diffraction patterns.

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