Cholesteric Liquid Crystals
From mood patches to polarizing paints and reflective color displays

Stephen Jacobs
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Since 1978 the Laboratory for Laser Energetics (LLE) at the University of Rochester has been researching liquid crystal optics. The selective reflection effect in cholesteric liquid crystals (CLC’s) is nonabsorptive making them useful for beam control on our high-peak power OMEGA Nd: glass lasers of the mid ‘80’s. CLC fluids are used in thermography (temperature sensors) and in the novelty market (mood rings). With the invention of a polymeric form of CLC, it became possible to manufacture CLC particles for use as stable, polarizing pigments in paints for automobiles, and as the basis for reflective, color particle displays.

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Speaker Bio
Stephen D. Jacobs left Denver for the University of Rochester as a freshman in 1966, and he never left. He has worked at the Laboratory for Laser Energetics (LLE) his entire career, since receiving both his B.S. (1970) and Ph.D. (1975) degrees in optics. He manages over 35 scientists, engineers and technicians doing basic materials research, advanced development, process development and optics manufacturing. Areas of responsibility include precision optics from the IR through the UV, high power thin film coatings, and laser induced damage. He holds joint appointments as a Professor of Optics (The Institute of Optics), Professor of Chemical Engineering (Department of Chemical Engineering), and Professor of Materials Science (Materials Science Program). He teaches graduate courses in optics manufacturing and in liquid crystals. He supervises Ph.D thesis research that focuses on deterministic polishing processes and liquid crystal optics.