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Rheoscopic Fluids in a Post-Kalliroscope World DANIEL BORRERO-ECHEVERRY, Department of Physics, Willamette University, 900 State St., Salem OR 97301, CHRISTOPHER J. CROWLEY, Center for Nonlinear Science and School of Physics, Georgia Institute of Technology, 837 State St., Atlanta, GA 30332 — In rheoscopic flow visualization the working fluid is seeded with small plate-shaped particles, which preferentially align in the flow due to their anisotropy. This leads to preferential light scattering, which highlights qualitatively different regions of the flow. For the past four decades, the gold standard in rheoscopic flow visualization has been Kalliroscope, a commercial product consisting of crystalline guanine particles. Guanine is a shiny compound extracted from fish scales and has traditionally been used in cosmetics to provide a pearlescent effect. It stands out among other options for rheoscopic flow visualization (e.g., aluminum flakes or coated mica particles) due to its relatively good density match with water. Guanine extraction, however, is an expensive process and as the cosmetics industry has adopted less expensive alternatives, commercial guanine production has dropped, leading to the closure of the Kalliroscope Corporation in 2014. In this talk, we discuss our recent discovery of a rheoscopic fluid based on stearic acid crystals, which has an overall performance similar to, and in some cases superior to, Kalliroscope. This rheoscopic fluid can be extracted from household items making it very inexpensive and readily accessible to researchers around the world.

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