Time-Lapse and Cure-On-Demand Polymerizations for Adhesives, Wood Repair and Art

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The goal of cure-on-demand polymerization is to create one-pot systems that have a long shelf live but will react rapidly when curing is desired. We use two approaches: coupling polymerizations with clock reactions and an approach called frontal polymerization in which a localized reaction zone propagates from the coupling of thermal transport and the Arrhenius dependence of the reaction rate of an exothermic polymerization. We demonstrate that frontal polymerization can be used to create a cure-on-demand putty for filling holes in wood, marble, and sheet rock. The putty has a months-to-years shelf life, is a one-pot formulation, can be applied leisurely and then cured rapidly with a flat heat source. Finally, we will explore the commercialization of "QuickCure Clay" for the arts and crafts market.

Dr. John A. Pojman, a native of North Royalton, Ohio, received his B. S. in Chemistry (with a minor in Classics) from Georgetown University in 1984. He earned his doctorate in Chemical Physics in 1988 at the University of Texas at Austin. Pojman then worked for two years at Brandeis University with Irving Epstein. In 1990 he joined the Chemistry & Biochemistry department at The University of Southern Mississippi, where he taught for 18 years. Dr. Pojman joined the Department of Chemistry at Louisiana State University in August 2008, where he is a Professor of Macromolecular Science and department chair.

Pojman has co-authored one monograph, *An Introduction to Nonlinear Chemical Dynamics*, and co-edited two others. He has served four times as a guest editor for the journal *Chaos*. He has authored 169 peer-reviewed publications and 10 book chapters. Professor Pojman has made 294 presentations and received two patents.

Professor Pojman is an expert on nonlinear dynamics in polymer systems and effective interfacial tension between miscible fluids. He is an avid bass fisherman and amateur herpetologist with a special interest in the aquatic salamanders of Louisiana. He also boasts the world largest collection of pocket protectors. <u>www.pocketprotectors.info</u>. John is the President and CEO of Pojman Polymer Products, LLC (3pllc.com).

He lives in Baton Rouge with his wife, Dionne Rousseau, and nineteen-year old son, John Jr.



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Propagating Front

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