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"The chemorheology of resins undergoing conversion and its effect on stratification in resin composites: Lay title: "Keeping the bananas suspended in the Jello"

Tuesday, February 24, 2009

Room 183 - Love Building

3:00 - 4:00PM

ABSTRACT

The implication of how fast a monomer converts to a polymerized form has been commonly probed under a range of different experimental conditions (formulation variations, isothermal, heating schedules, pulsed thermal excursions, etc). Cure conversion has been evaluated by spectroscopy, calorimetry, and rheology among others. We've focused in my research group on rheology as this has significant impact on both processing and safety considerations in scale up. In my talk, I will focus on our experimental efforts to characterize photopolymerizable acrylates commonly used in photolithography and in dentistry using an adapted photorheometer, and our modeling efforts to characterize the dynamic viscosity as a function of formulation, filler content, and other experimental conditions. This has led to other efforts to model and describe more generally other dynamic viscosity data

published in the literature using a modified Boltzmann sigmoidal model. While initially an empirical model, we have been investigating other theoretical approaches that may overlap with this empirical model providing a theoretical justification for a much simpler model than those based on free volume concepts.

BIOGRAPHY

Brian Love just joined the University of Michigan as a Professor in a distributed appointment between Engineering and Dentistry in January 2008, Prior to that, he was on the faculty at Virginia Polytechnic Institute and State University where started as an Assistant Professor in 1993 and promoted through the ranks. Prior to that, Professor Love was an NIH post-doctoral fellow at Georgia Tech from 1991 to 1993 so he has some local roots as well. Love was educated at the Univ. of Illinois where he received his BS (Chemistry: 1984) and MS (Metallurgy & Mining Engineering: 1986) degrees and Southern Methodist Univ. where he received the Ph.D. (Applied Science) in 1990. Professor Love has published 60 refereed journal articles, 3 patents, and 5 book chapters. During his tenure at Virginia Tech and Michigan, he taught many different classes but commonly taught polymer and biomaterials courses. Professor Love has also created two boutique classes: skin properties, function & bioengineering applications, and cell adhesion which have garnered wider interest and support.

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