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**Characterization of Release Mechanism in Polymeric Drug Delivery Systems** ARTHUR JAMES LAPLANTE, ROBIN MARIE PLACHY, KAORU AOU, JAKE FERGUSON, SHAW LING HSU, Polymer Science and Engineering Department, University of Massachusetts — Our polymeric drug delivery system is based on our understanding of phase behavior of polymers [e.g poly(lactic acid)], low molecular drugs and various solvents used in processing. Clearly the different morphologies achieved, based on different phase separation kinetics, can affect drug release rates. Release of drugs, in most cases, involves the exchange between the extraction media and drug. We have characterized the transport behavior using a number of unique techniques. Reflectance infrared spectroscopy has given us a detailed description of the release rate of drugs into the extraction media. Surface plasmon resonance has shown the overall mass loss. UV-visible spectroscopy has yielded the concentration of drug in the solution. These measurements are compared to the release mechanism based on Fickian diffusion. The two step release rates observed can only be explained by taking into account differences in the morphological features of the phase separated films.

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