Purdue University researchers use nanoscale IR spectroscopy to provide key insights into drug-polymer and polymer-polymer blends

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For Immediate Release

Santa Barbara, CA – Two new papers are going to press featuring the use of Anasys Instruments’ nanoIR™ system by Professor Lynne S. Taylor’s group in the Department of Industrial and Physical Pharmacy at Purdue University. In each study, miscibility of pharmaceutically relevant blends was examined and specific sub-micrometer-sized domains characterized using standard atomic force microscopy (AFM) and nanoscale Infrared spectroscopy (AFM-IR).

The first of the two papers, entitled “Nanoscale Mid-Infrared Imaging of Phase Separation in a Drug-Polymer Blend” is being published in the June 2012 issue of the Journal of Pharmaceutical Sciences. The researchers at Purdue explored the applicability of nanoscale IR spectroscopy and imaging to analyze a partially miscible model pharmaceutical drug–polymer system consisting of felodipine and poly(acrylic acid) (PAA). By combining AFM topography imaging with AFM-IR chemical information obtained at a high spatial resolution, it was possible to interrogate both the structure and chemical composition of phases in the felodipine–PAA blends. The second of the papers “Nanoscale Mid-Infrared Evaluation of the Miscibility Behavior of Blends of Dextran or Maltodextrin with Poly(vinylpyrrolidone)” has been accepted for publication in the Journal of Molecular Pharmaceuticals. In this study, the AFM topography data combined with AFM-IR chemical information provided structural insights into the formation of phase-separated systems. The size, shape, and distribution of the different domains formed and the dependence of these features on the molecular weights of the polymers was analyzed. AFM-IR analysis is an important complement to more traditional miscibility evaluation probes currently available in the field. According to Professor Taylor “being able to obtain infrared spectra at nanoscale spatial resolution is a dramatic development that should provide new insights into the microstructure of pharmaceutical formulations. This will enable us perform in-depth studies that enable relationships between microstructure, processing and product performance to be elucidated.”


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**About Anasys Instruments**
Anasys Instruments is dedicated to delivering innovative products and solutions that analyze samples with spatially varying physical and chemical properties at the micro and nanoscale. Anasys Instruments introduced the nanoTA in 2006 which pioneered the field of nanoscale thermal property measurement. In 2010, Anasys Instruments proudly introduced the award-winning breakthrough nanoIR™ Platform which pioneered the field of nanoscale IR measurement.

For further details, please visit [www.anasysinstruments.com](http://www.anasysinstruments.com)

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