RESEARCH EQUIPMENT RESERVE FUND (RERF)
Final Report

Optical Waveguide Lightmode Spectroscopy (OWLS) system
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Award information
This award ($40,350) was made in June 2011 after evaluation of proposals submitted to the Spring 2011 RERF solicitation. Purchase of the OWLS system brought a new capability to OSU, intended to serve as a collaborative research resource.

Final budget statement
All of the RERF funds were used solely to purchase the OWLS system, as described in the original proposal.

Brief summary of scholarly activities made possible as a result of RERF funding
Since securing the instrument in July the OWLS system continues to be a focal point of substantial activity. Currently OWLS is serving as the major instrumentation resource for two M.S. thesis projects in chemical engineering: Comparison of bioactive peptide adsorption at uncoated and PEO-coated hydrophobic surfaces with reference to a history-dependent model for protein adsorption (Justen Dill, expected graduation June 2012); and Fibrinogen repulsion and retention of antibacterial activity at nisin-loaded PEO layers (Julie Auxier, expected graduation December 2012). OWLS is also the major instrumentation resource for one UHC thesis project in bioengineering: Molecular origins of peptide entrapment in polyethylene oxide layers (Marsha Lampi, expected graduation June 2012).

In the coming months, OWLS will serve as the major instrumentation resource for an undergraduate research project to be completed by Brynn Livesay (chemical engineering junior), on surfactant modulation of the adsorption of the recombinant human Factor VIII manufactured by Bayer HealthCare for hemophilia A patients. It will also be used in the coming months to assist quantification of surfactant stabilization of protein drugs in general, in the context of the dissertation research carried out by Hyo Jin Lee (Ph.D. candidate in chemical engineering, supported entirely by Amgen, Inc. at their Thousand Oaks site).

Finally, Dr. Woo-Kul Lee, visiting our lab on sabbatical from Dankook University in Korea, will be joined by one of his graduate students this month (December 22) who will stay through the end of February 2012, and use OWLS in an investigation of protein adsorption on calcium phosphate films for bone implantation.

Brief summary of any additional scholarly activities made possible with RERF funding
All such activities are summarized above.

List of external funding requests developed and submitted as a result of RERF funding
Two proposals were submitted by the PIs last October, each including preliminary data recorded with OWLS and each describing critical experiments to be carried out with OWLS:

- Microfluidic platform for treatment of sepsis (with A. Higgins, G. Jovanovic, and K. Sharp)
  NIH/NIBIB, 2012-2016, $2,718,074

- Molecular origins of peptide entrapment in polyethylene oxide layers
  NSF, 2012-2015, $318,790