

## **NSF CCLI grant for scanning Raman microscope and Raman spectrometer**

Professor Maria Hepel of Chemistry Department and Professor Daniel Aruscavage of Biology Department have been awarded an NSF grant, Award CCLI No. 0941364, in the amount of \$200,000, for two years 2010-2012. The grant entitled "Raman Spectroscopy Implemented into Undergraduate Science Education" has enabled procurement of a scanning Raman microscope and Raman spectrometer which will be utilized in a number of courses and in student undergraduate research. In this project, new microscale imaging and chemical identification capabilities are being developed through the innovative coursework based on the Raman Scattering microscopy and Raman spectroscopy instrumentation acquired by the State University of New York at Potsdam. Upon departure of Prof. D. Aruscavage, Professor Robert Ewy will continue to work on biology projects.

The innovative coursework involves hands-on experiences with Raman instrumentation for students of two science departments (Chemistry and Biology) and equipment demonstrations for Anthropology Department. A series of new experiments are being developed for use in lower and upper division undergraduate courses, including: analysis of fibers, dyes, paint chips, core-shell nanoparticles for highly efficient Raman tags, Raman microanalysis of composition of pharmaceutical tablets, surface-enhanced resonance Raman scattering (SERS) spectroscopy of Rhodamine 6G at picomolar concentrations, quantitative analysis of DNA using SERS, and others. The experiment in biology will include studies of various chemicals on bacteria. The new instrumental capabilities are also being utilized to engage students in undergraduate research in the fields of nanoscience phenomena to enhance student's preparation for solving future challenges in the place of work, in industrial labs or academia.