

## **AU professor experiments with hydrated glass**

8/09/02

Dr. Rebecca DeRosa, assistant professor of ceramic engineering and materials science, recently received a summer research grant providing funding for her research. Her project, "Hydrated Glass Surfaces for Biomedical Filters or Sensors," is an extension of previous research done by Dr. DeRosa and her colleagues. During the past year, DeRosa uncovered a unique attribute of one of her glasses: after undergoing a certain process administered by DeRosa the glass remained hydrated for three to five times longer than it had been prior to the test, as long as it was left in environments that surrounded it completely. There are two distinctly different areas where DeRosa believes this glass will be useful. The first is in the biomedical field. Because the glass performs well in an enclosed environment, DeRosa believes that it may be a good substance to use as a biological sensor or a filter to separate biological molecules such as proteins or genes. This would be accomplished by creating hydrated channels on the surface and drawing the molecules through by electrophoresis, separating molecules by charge or size. This is already being done with silicon, glass, and plastic substrates, however these require the application of aqueous solutions, which are prone to evaporation. With DeRosa's hydrated glass, this would no longer be an issue. The second application DeRosa anticipates for her hydrated glass is as a sensor. "As a sensor, it could be feasible that a glass slide could be taken into the field, exposed to an atmosphere in question, and analyzed on the spot." After being properly developed it is possible that the glass could be used for detecting biological weapons. Several students are working with Dr. DeRosa to "formulate glass samples for analysis, create a patterned surface using hydration methods, and analyze the surface conductivity and surface energy as a function of hydration." If their experiments go as planned Dr. DeRosa hopes to apply for additional funding to continue her research after their work this summer.