AU professor to combat environmental hazards
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Dr. Alan Meier, assistant professor of metallurgy and materials engineering in the School of Ceramic Engineering and Materials Science at Alfred University, hopes his summer research will lead to an alternative cleaning solution for aluminum nitride (AlN). Beryllium oxide (BeO) has typically been used in microelectronics applications, but it produces hazardous waste that scientists have long been looking to reduce, explained Meier. It was discovered that aluminum nitride could replace beryllium oxide without creating the hazardous waste. However, it is imperative that the surfaces of such microelectronic devices are clean to work properly. Unfortunately, the only cleaners that are efficient in cleaning the surfaces are hazardous to the environment on their own.While aluminum nitride has a great amount of potential as a "green" alternative for beryllium oxide, it reacts strongly with many cleaning solutions causing problems, such as surface erosion, which can lead to reliability issues.Thus Meier has created a series of experiments in an attempt to find an alternative cleaning method. Meier said it is necessary to balance two important factors: one, avoiding unwanted surface reactions and surface corrosion, and two, creating a cleaning procedure aggressive enough to remove any organic or metallic surface contaminants acquired during processing.Meier will be aided in his research by two undergraduate students: Rob Campman and Dawn Mandich. All three plan to travel to the International Microelectronics and Packaging Society (IMAPS) conference in Denver in September in order to present their findings.