

UTSA physics team granted patent for semiconductor cleaning

December 11 2004



What began as a "what if" four years ago when three University of Texas at San Antonio undergraduate physics students and their professor were working in a laser research laboratory, today is a patented invention that could save millions of dollars each year for the semiconductor industry.

UTSA physics professor Dhiraj Sardar and former undergraduate students Anthony Sayka, Fred Barrera and Ray Yow are the inventive minds behind United States Patent and Trademark Office (USPTO) patent no. 6,766,813, "Apparatus and Method for Cleaning a Wafer," granted July 27, 2004.

Photo: UTSA research team (from left): former undergraduate students

Fred Barrera, Ray Yow and Anthony Sayka and Professor Dhiraj Sardar

According to Sayka, a 2003 alumnus and now a senior process engineer with Intel Corporation in Rio Rancho, N.M., the wafer cleaning process the team developed breaks new ground by using ultrasonic energy at varying frequencies and high-pressure liquids to clean and remove particles on wafers that contain circuits that will be used in computers, wireless devices and other products.

"This patent is very significant for the semiconductor industry because it provides a safe and efficient method of cleaning semiconductor wafers," said Sayka.

The invention can be used to reduce the level of particles and contamination on a wafer. Cleaner wafers result in higher yields, and any increase in yield is desirable because it means more potential revenue per wafer.

"We were especially pleased to support this patent application, and we are delighted that it has been granted," said UTSA Provost Guy Bailey. "The effort behind it represents some of the best work that has taken place at UTSA, and it is a model of what good scientific research can do both for our students, our economy and society."

"This kind of collaborative research among faculty, students and our outside partners is an essential part of a first-rate education, and we strongly encourage it at UTSA," added Bailey. "The success of the project is an excellent reflection both of the type of students and the type of faculty we are getting now at UTSA."

The UTSA Office of Business Affairs will work with the University of Texas Health Science Center at San Antonio's Office of Technology Ventures to find licensees and commercialize the patented technology.

Wafer cleaning is the most frequently repeated step in integrated circuit manufacturing. Costs for wafer cleaning equipment and chemicals this year are forecast to exceed \$1.5 billion.

Source: [University of Texas at San Antonio](#) (by Kris Rodriguez)

Citation: UTSA physics team granted patent for semiconductor cleaning (2004, December 11)
retrieved 25 April 2024 from
<https://phys.org/news/2004-12-utsa-physics-team-granted-patent.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.