University Coal Research

Success Stories

Improved Laser Printing and Color Copying

An international paint company, **Courtaulds Coatings** of Newcastle, U.K., has commercialized a concept that was developed through a United States Department of Energy University Coal Research (UCR) grant. Courtaulds produces specialty powders that can be electrostatically charged for deposition on a substrate. The most common applications for these powders are seen in copying machines and laser printers.

Courtaulds' research division required an instrument to measure different parameters of charged powers, including the magnitude and polarity of each particle. Meanwhile in the U.S., under a UCR grant, the **University of Arkansas at Little Rock** (UALR) was studying the dry electrostatic separation of mineral particles from coal. Dry electrostatic separation is based on the difference between the electrostatic charge properties of coal and mineral matter; consequently, the measurement and polarity of electrostatic charge on individual particles helps optimize the separation parameters. No instrument was commercially available to perform such measurements. Under the UCR grant, the UALR built the Electrostatic Spray Dynamics Analyzer (ESDA) to perform real-time measurements of the electrostatic charge on mineral particles and coal. Shortly thereafter, Courtaulds contacted UALR to modify the ESDA for a new application of this instrument. Under a new research contract between UALR and Courtaulds, UALR built an instrument and delivered it to Courtaulds at Newcastle. This instrument helped Courtaulds study and improve the electrostatic spray properties of their powders. The net result to Courtaulds was the refinement of their existing products and the development of new products.