

## The Physics Department of King's College, London, uses the Quorum Q150T ES to gold coat samples for enhanced scanning electron microscopy imaging

Quorum Technologies talk about how the Physics Department at King's College, London, chose the Q150T ES coater to deposit gold on samples for high resolution imaging using scanning electron microscopy. William (Bill) Luckhurst heads up the operation and maintenance of the instrumentation facilities of the Physics Department of King's



College, London. With nearly forty years' experience, Bill has seen the development of many techniques including scanning electron microscopy (SEM), atomic force microscopy (AFM), thin film thermal evaporation and

vacuum design & practice. These days, Bill and his colleague, Dr Ben Blackburn, are responsible for managing the use of the instrumentation, providing training and induction to new users.

Having modern, easy-to-use and reliable equipment are some of Bill's criteria when he goes out to

source new instrumentation. With a wide range of samples to analyse with imaging requirements from the micron to the nanometre level, a reproducible and solid coating system is essential. As Professor Al-Jamal Khuloud from the Pharmacy Department has said "coating our samples, submicron nanoparticles of a variety of shapes and dimensions, with thin layers of gold prior to SEM imaging not only enhances image contrast, it conducts charge away from the surface." Such requirements were important factors when Bill came to purchase a new coater around 18 months ago.

Bill takes up the story: "Procurement rules insist on three quotations and then a justification case for the purchase. When I requested a demonstration, Quorum were by far the most responsive of manufacturers. Other vendors were either not really interested or their products turned out to be prohibitively expensive. The Q150T ES was exactly what I needed at a price that I could afford in a package that looked good, was easy to use and maintain."

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## The ZEISS mining and geosciences applications development group supplies and uses Quorum's Q150T carbon & sputter coater to prepare mineral samples for analysis on their MinSCAN mineralogy laboratory system

Quorum Technologies report on how Carl Zeiss Microscopy has incorporated their Q150T coater into their ruggedized analytical solutions supplied to the mining, geosciences and oil & gas sectors. One of the main applications of the geosciences business, with its automated mineralogy software, is to provide data on mineral processing plant products from mining companies. It is vital that operating mines are able to track mineralogical and textural variation for processing and recovery optimizations. Recognising variability can save or make huge amounts of money to a company by maximizing yield and quality. The instrumentation has to be rugged and extremely reliable as it will often be located at the mine site itself. This has to be easy-to-use. Operators are not qualified scientists. They just require quick, accurate and actionable data to make informed decisions.

ZEISS supplies a special dedicated package to deliver to these requirements. This comprises sample preparation equipment and a "ruggedized" SEM. The system, known as MinSCAN, has been designed for this challenging environment, a mine-

site mineralogy laboratory on wheels! A powerful data system takes the results to enable an increase in profits through greater concentrate quality and reduced losses to tailings (the materials left over after the process of separating the valuable fraction from the uneconomic fraction of an ore.). Being able to rapidly troubleshoot recovery issues, optimize plant performance and complement assays gives metallurgists, mine managers and superintendents the confidence to make effective decisions based on reliable, quantitative data.

Key to reproducible sample preparation is a Quorum Q150T providing high resolution carbon and sputter coating. Each 30 mm standard sample requires reproducible, uniform, thin coatings. Carbon coating is used in perhaps 80% of the applications where mineral particles are being investigated. For oil and gas applications, the ability of having a thin coating becomes most important when making porosity measurements. Uniform thinness will greatly reduce imaging artefacts.

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