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An upgraded multiprobe surface analysis tool for photocathode research and development

Tuesday 3 June 2025 16:00 (2 hours)

STFC Daresbury laboratory has developed a suite of analysis equipment for characterisation of photocathode materials. This includes the TESS spectrometer for measuring the mean transverse energy*and a multiprobe surface analysis system for measuring the chemical and physical properties of samples**. Recently, the multiprobe system has been upgraded to include a monochromated X-ray source which in conjunction with the high-resolution analyser should produce improved ability to resolve the chemical state of surface constituent atomic species. This could be particularly useful in the analysis of telluride and antimonide cathodes where incomplete reaction of the constituent species could significantly influence performance. The atomic force microscope has also been recommissioned giving access to surface topological information in the same vacuum environment. Finally, a new sample deposition chamber has been added which will allow additional deposition sources to be attached thus broadening the range of photocathode research that can be carried out.

Footnotes

- L.B. Jones et al, 'The measurement of photocathode transverse energy distribution curves (TEDCs) using the transverse energy spread spectrometer (TESS) experimental system'Review of Scientific Instruments 93 (2022) 113314.

** T.C.Q. Noakes et al 'Commissioning of the SAPI for Operation with Metal Photocathodes'EuCARD2-Mil-MS73-Final, Report Number: CERN-ACC-2014-0039.

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