

Instrumentation and Diagnostics for Bi-Alkali Photocathode Production

Bi-Alkali photocathodes have been widely used in photomultiplier tubes and night vision equipment. They have high quantum efficiency (QE) and low thermal emittance in the visible light spectrum and are of crucial importance to Free Electron Laser (FEL) based light sources. But the photocathode production process has not been well defined, and performance of cathodes can vary wildly when produced under the same conditions using standard methods of fabrication (Yo-Yo reaction.)

Advanced tools for characterization of cathode performance during and after fabrication are critical to the understanding of the growth process. We have developed a new instrumentation and diagnostics system for bi-alkali photocathode production that includes a high resolution Ultraviolet/Visible light monochromator and a transverse momentum measuring system (Momentatron) to quickly characterize the performance of photocathodes produced with different fabrication techniques

Primary author: NASIATKA, James

Co-authors: PADMORE, Howard; FENG, Jun