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Technology transfer case study: Industrialized manufacturing of high quality photocathode thin films.

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Alkali antimonide and telluride photocathodes are widely used in modern photoinjectors and are primary candidates for the most demanding future accelerator applications that require bright and intense electron beams. We report on the progress of the technology maturation and transfer initiative aimed at achieving reproducible automated growth of the alkali antimonide thin films, in order to enable commercial photocathode production in the near future. The project is led by LANL in partnership with two private R&D companies, Euclid Beamlabs and Radiation Monitoring Devices. We will discuss our approach for the automated photocathode thin film growth process and its connection with the theory of photoemission and intrinsic material properties. Additionally, we will share the insights gained through the initial stages of the project, and our vision of the future photocathode market. Preliminary findings regarding the quality and reproducibility of the photocathode manufacturing process are also analyzed and presented.

Footnotes

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