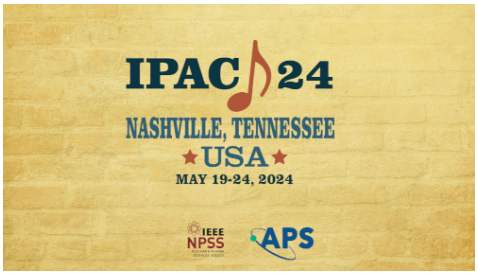

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Rubidium telluride photocathodes for high quantum efficiency and low mean transverse energy accelerator applications

Wednesday, 22 May 2024 16:00 (2 hours)

High brightness electron beams are required to drive next generation light sources. This will only be achieved by photocathodes with high quantum efficiency (QE) and low intrinsic emittance, whilst also having long operational lifetimes and minimal dark current. Cesium telluride (CsTe) photocathodes are currently the favored material for many accelerators around the globe, typically chosen for its relatively high QE and its significant operational lifetime compared to other alkali-based alternatives. Rubidium telluride (RbTe) has the potential to have a similar peak QE to CsTe with a higher work function. This would lead to a lower mean transverse energy and reduced susceptibility to field emission, improving brightness and reducing dark current.
In this paper, thin film RbTe photocathodes were grown and are characterized using X-ray photoelectron spectroscopy, QE measurements and the Transverse Energy Spread Spectrometer (TESS) at Daresbury Laboratory.

Footnotes

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