

## PHOTOCATHODES – A MATERIALS SCIENCE PERSPECTIVE

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### ABSTRACT

Photoemission has long fascinated physicists – it was first explained theoretically by Einstein, for which he was awarded the Nobel prize. In modern semiconductor photocathodes, the process involves many of the most complex aspects of solid state physics – band structure, surface dipoles, electron and phonon scattering and in some cases spin-level splitting. Yet this complexity is also an opportunity, as the tools of modern materials science can be used to engineer cathodes for specific applications [1], from light detection to ultra-bright electron sources [2]. This talk will focus on material science tools which can provide in situ optimization options for photocathodes, including x-ray diffraction, fluorescence and reflectivity[3]. Pathways to enhancing the performance of photocathodes will be addressed.

### References

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