

The Search for the Elusive Ideal Antimonide Photocathode

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Abstract

The search for the high quantum efficiency photocathode began with the need for an electron generator in a photo injector. This photo injector was to be the front end for a high powered free electron laser. The initial choice for the cathode was p-type GaAs. With cesium on the surface followed by a small oxygen dose, this material had a negative electron affinity. Spin polarized electrons could also be obtained for experiments at SLAC, for example.

This brief tour of my research will endeavor to provide what I believe are the key ingredients necessary to produce, store, and transfer the alkali antimonide photocathodes. I will do my best to relate to you my successes, spectacular failures and what I would call trade secrets. I will attempt to give you observations that led to the advances made over the short ten-year period that I was able to work on the development of the cathodes.