

Nanopatterned cathode tests in UCLA Pegasus RF photoinjector

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We discuss the possibility of nano-engineering the cathode surface to enhance the emission performances in high brightness electron sources. Focused Ion Beam technique is used to dig a nanohole array in the copper cathode backflange of a S-band RF photogun and obtain a resonant response at 800 nm. In this paper, we report on the experimental studies of the charge yield, thermal emittance, response time, and damage threshold of a nanostructured copper cathode driven by a Ti:Sa ultrashort laser pulse in an rf photoinjector at the