



Strong-field photoemission from silicon field emitter arrays

Strong-field photoemission from silicon field emitter arrays is investigated by P.D. Keathley et al. (pp. 144-150) experimentally and results are explained using a “simple-man” optical-field emission model. Spectra are collected throughout an in-situ laser annealing process, leading to a red-shift in emitted electron energy along with an increase in electron yield. After the annealing process, a high energy plateau is formed which is explained through optical-field emission along with electron re-scattering with the tip surface.

The image is an artistic representation of ultrafast, strong-field emission of electrons from a silicon nanotip. The electrons are emitted in sub-cycle bunches using an incident optical pulse centered at 800nm. Due to laser acceleration dynamics after emission, some electrons re-scatter from the tip's surface leading to a broadband plateau in the electron energy spectra.