

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Near Field-Emission Scanning Electron Microscopy with Energy Analysis DANILO ANDREA ZANIN, LORENZO GIUSEPPE DE PIETRO, HUGO CABRERA, PETER THALMANN, ANNA-LENA REDMANN, URS RAMSPERGER, DANILO PESCIA, MEHMET ERBUDAK, Laboratory for Solid State Physics ETH Zurich — We report on new results about near field-emission scanning electron microscopy (NFESEM) which emphasize the potential of generating secondary electrons using a primary electron beam of low energy electrons. Based on scanning tunneling microscopy technology NFESEM uses a sharp W-tip as a cold field emitter, which scans the surface at constant distance, usually in the range of 5 to 40 nm. An applied voltage between tip and sample induces field emission at the tip. These primary electrons are then accelerated towards the target and successively scattered by its surface generating secondary electrons. The last ones, which carry information of the sample, are emitted and energy analyzed. Spatially resolved analysis of energy and polarization of secondary electrons may provide new insight into surface microscopy.

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Date submitted: 09 Nov 2012

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