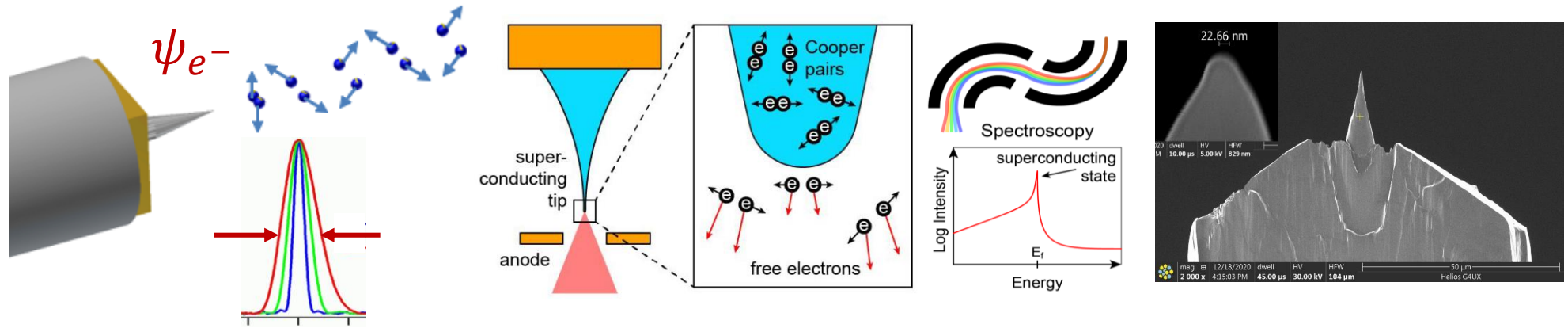


# Superconducting niobium nanotip electron field emitter



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The presentation describes the current status in the development of a superconducting, monocrystalline Nb nanotip electron source. Our data indicate that the emitted beam has an ultralow energy distribution at a tip temperature of 4 K due to surface states. We characterize the emission with an energy analyzer and a delay line detector for correlation analysis. It will be pointed out that the Nb-tip has the potential to be a correlated, entangled, two-electron field emitter.



Vision: Superconducting electron sources can be a game-changer in microscopy

- Quantum Information Science with entangled electrons (in analogy to photons)
- Ultra-high resolution correlated electron spectroscopy
- New sources for microscopy: low aberrations due to small energy distribution
- Non-interactive soft surface analysis, interferometry