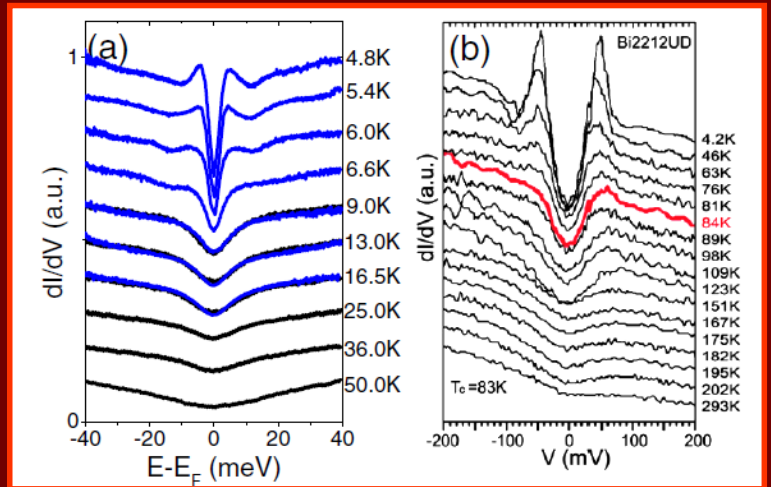
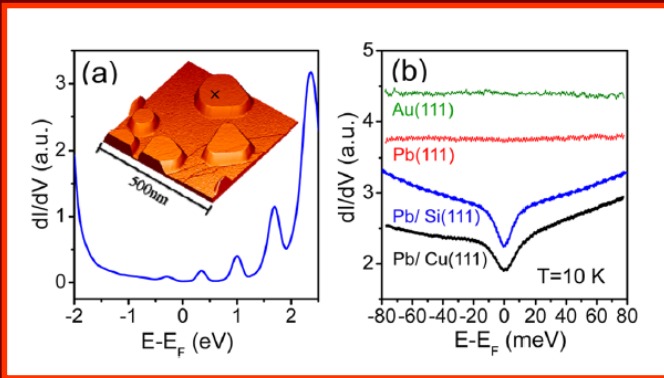


Pseudogap Mediated by Quantum-Size Effects in Lead Islands

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Scanning tunneling spectroscopy measurements of Pb islands on Si(111) at high energy resolution reveal a novel pseudogap, or a pseudopeak in special cases, around the Fermi level in addition to the usual quantum well states. These gap or peak features persist to as high as $\sim 80\text{K}$ and are uniquely related to the quantum well nanostructure of the Pb islands.



The major experimental findings are accounted for by our model calculation based on an interplay between electron-phonon scattering and quantum confinement. However the effects of finite island dimensions remain an interesting subject for future investigation.

