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Ion bombardment of Ni(110) studied with inverse photoemission, LEED, and simulations BENJAMIN YOUNG, JIM WARNER, DAVID HESKETT, University of Rhode Island — Inverse Photoemission Spectroscopy (IPES) performed on clean Ni(110) reveals an unoccupied electronic surface state ∼2eV above the Fermi level at the $\bar{Y}$ point of the surface Brillouin Zone. Ion bombardment (sputtering) of the sample creates vacancies and adatoms, which reduce the intensity of the representative state peak in IPES spectra. While the intensity of this IPES peak decreases with sputtering, well-defined diffraction spots in the surface LEED pattern give way to more diffuse ones with higher background intensity. Quantization of these permits analysis of their intensity profiles. Results of these techniques are presented for various sputtering conditions with 1keV Ne^+ and compared to previous results for 500eV Ar^+ on the same sample. Finally, we connect sputtering trends in the IPES and LEED data to Monte Carlo simulations of the sputtering process.

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