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Low Energy Inelastic Helium Atom Scattering from a Monolayer Solid. L.W. BRUCH, Department of Physics, University of Wisconsin-Madison, F.Y. HANSEN, Department of Chemistry, Technical University of Denmark — A time-dependent wave packet calculation for inelastic low energy atomic scattering by a physisorbed monolayer[1] has demonstrated that ^{4}He atoms incident on an incommensurate monolayer solid of Xe/Pt(111) readily excite shear horizontal monolayer phonons. Adding an absorbing potential has enabled the calculation to be extended to such long times that transient trapping has decayed and the scattering event is nearly complete. Extending the spatial grids has enabled the use of more nearly monochromatic, spatially broad, wave packets and the inelastic intensities are found to be sensitive to variations of scattering energy by 0.3 meV at incident energies of 4 to 9 meV. Trends for the inelastic intensities at low incident energies, near thresholds, are determined and correlations between the inelastic scattering results and the time development of the elastic scattering are discussed. These calculations were stimulated by the systematic body of experimental data available for ^{4}He scattering by a Xe/Pt(111) monolayer[2].

[1]L. W. Bruch and F. Y. Hansen, J. Chem. Phys. **122**, 114714 (2005)
[2]L. W. Bruch, A. P. Graham, and J. P. Toennies, J. Chem. Phys. **112**,314 (2000)

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