

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Variational diffuse intensity in the $\mathbf{a}^*-\mathbf{b}^*$ plane (constant Miller index l , shown in lower right). The intensity scale is the same as in Fig. 1C in the Main Text.

File Name: Supplementary Movie 2

Description: Acoustic vibrations of triclinic lysozyme according to the lattice dynamics model refined using diffuse scattering. The animation shows three acoustic modes with different polarization directions, $\hat{\mathbf{p}}$ (two polarized mostly transverse and one longitudinal) for the wavevector $\mathbf{k} = \mathbf{a}^*/13$ (the Γ -M direction in Supplementary Table 3 and Supplementary Fig. 15). To aid in visualizing the small motions, the vibrational amplitudes were multiplied by 100 and the frequencies were set to $\nu \sim 1\text{s}^{-1}$.