Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting information:

Shock wave propagation, plasticity, and void collapse in open-cell nanoporous Ta

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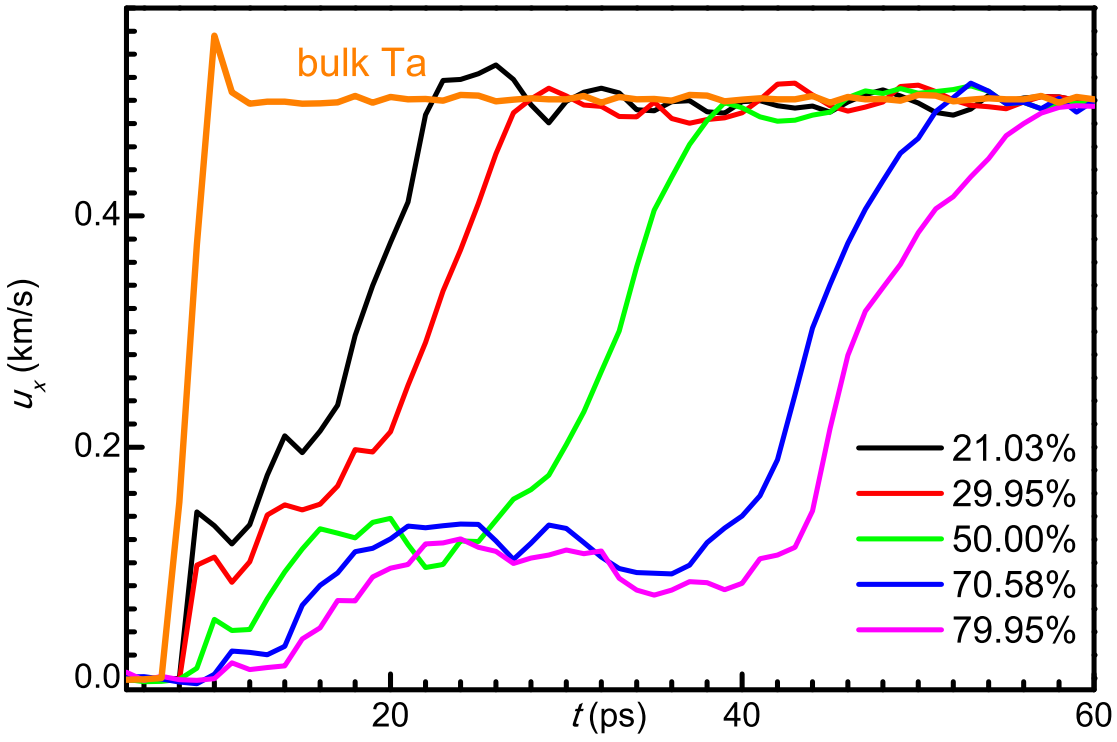

FIG. S1. Particle velocities, u_x, vs time, t, for a fixed slice ($30 < \mathrm{x} < 32$ nm) of our simulated np-Ta with different porosities at a impact velocity of $u_\mathrm{p} = 0.5$ km/s.

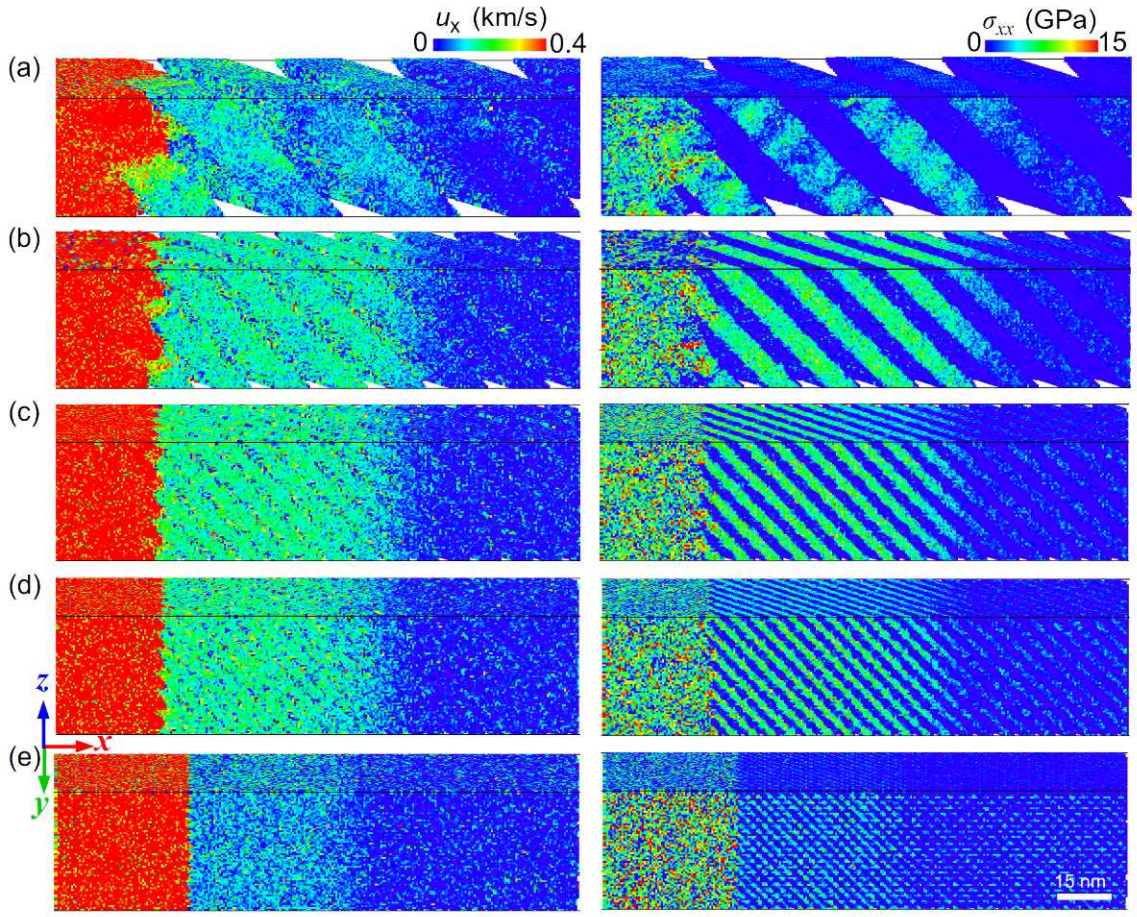

FIG. S2. 3D distribution maps of $u_x(x, y, z)$ (left column) and $\sigma_{xx}(x, y, z)$ (right column) under shock compression at $t = 50$ ps for five np-Ta configurations with same porosity ($\phi = 41.84\%$) but different specific surface area. Here the specific surface area for np-Ta are $\gamma = 0.22$ (a), 0.42 (b), 0.87 (c), 1.35 (d) and 2.40 nm^{-1} (e), respectively.

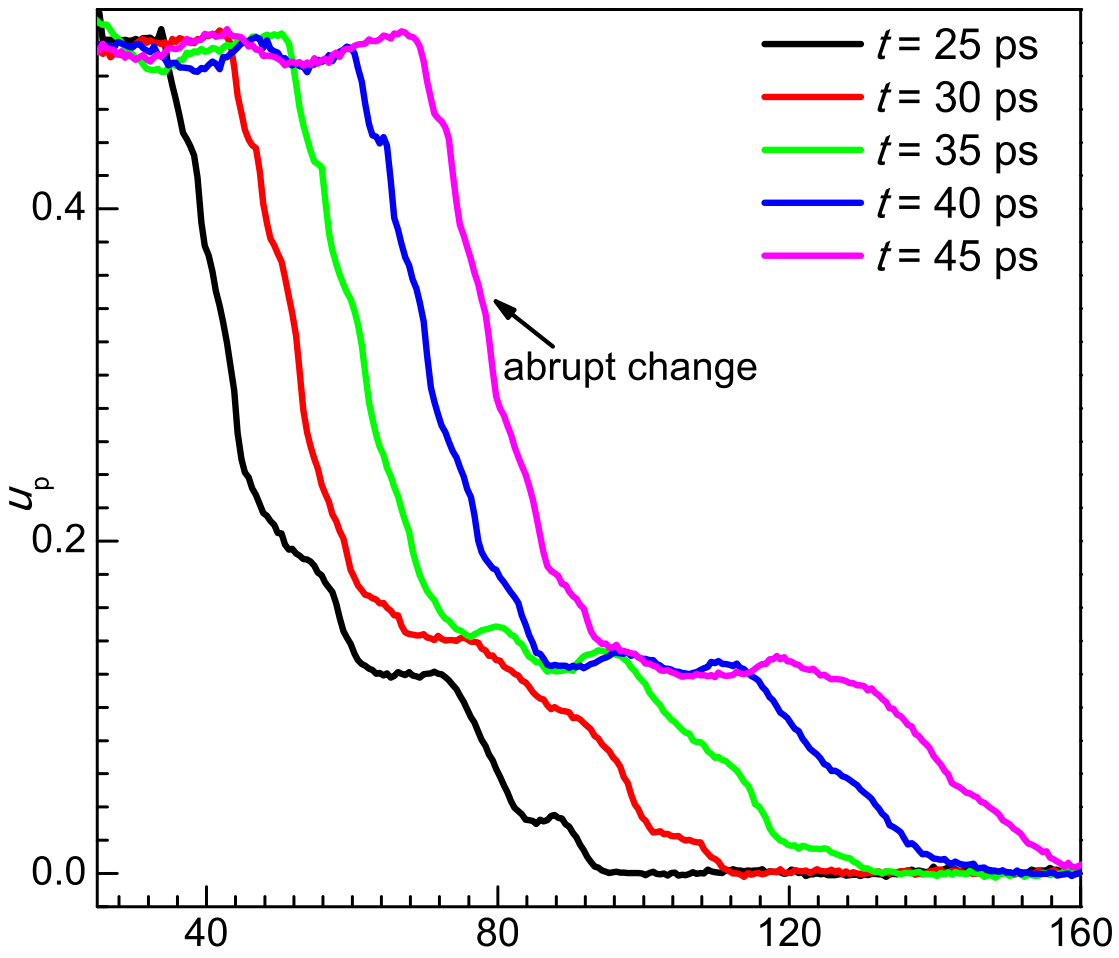

FIG. S3. The particle velocity profiles at different times for np-Ta with $\phi = 21.03\%$, during dynamic loading by a piston with a constant velocity, $u_{\mathrm{p}} = 0.5$ km/s.

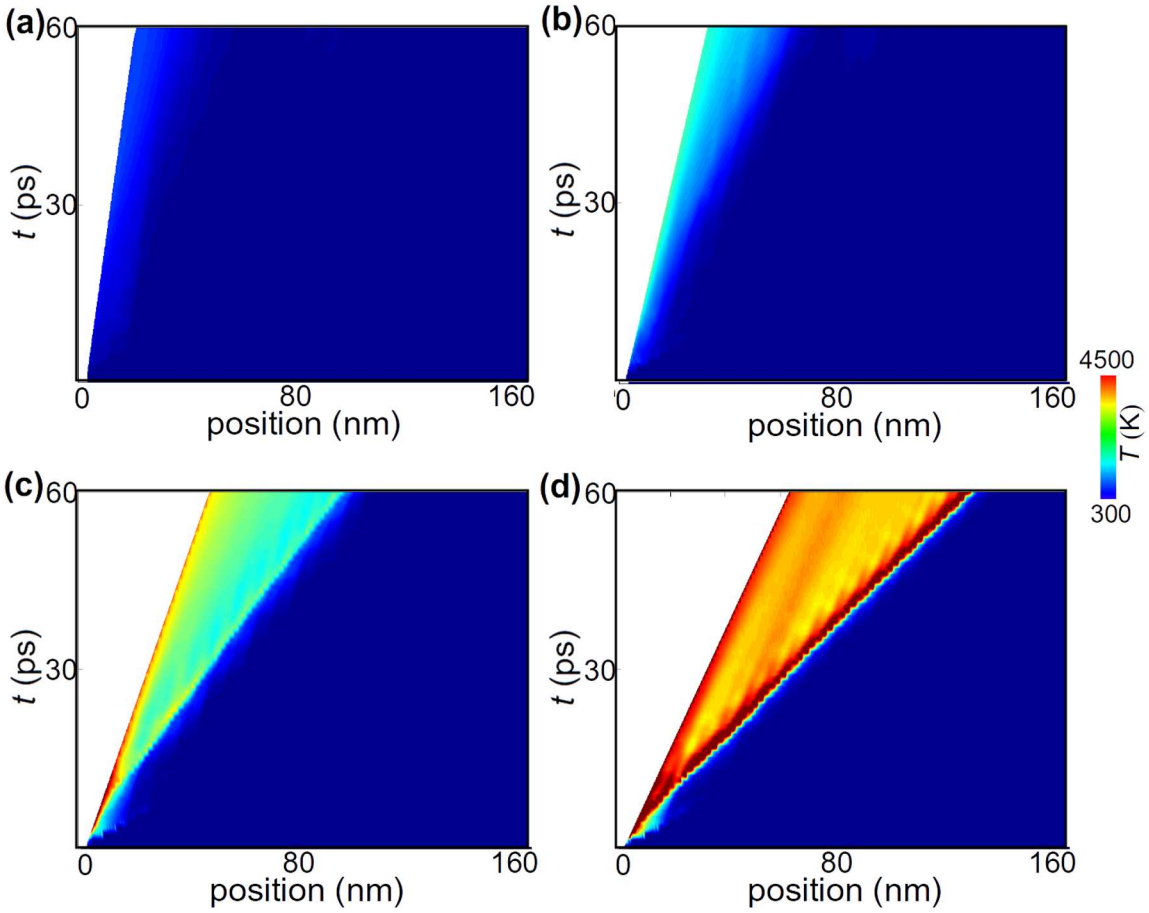

FIG. S4. Position-time diagram showing the evolution of shock-induced temperature-increases in nc-Ta. The impact velocities are 0.3 (a), 0.5 (b), 0.75 (c), and 1.0 $\mathrm{km\,s^{-1}}$ (d), respectively.

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