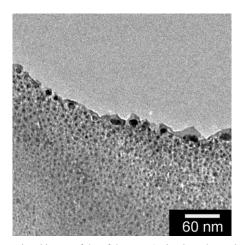
## **Supporting Information**

Fig. S1 shows a STEM cross-sectional image of the of the pure Au implanted sample, over a wider area than the one shown in Fig 3(b). The nanoparticles (the darker dots in the image) are all within 30-40 nm of the surface. We suggest the other smaller lighter dots are denser regions of the glass sample, likely indicating that melting and rapid solidification has occurred, in line with the simulation.



**Fig. S1** A wider area STEM cross-sectional image of the of the pure Au implanted sample shown in Fig. S1. It is clear that the metal nanoparticles are located just underneath the surface of the sample.