Supplementary Material

Figure S1 The same absorption, scattering and extinction power maps as shown in Figure 3, but with a linear color scale for better contrast within each map.

Figure S2 Sample SB-001 (Figure 10*a*) under the same lighting as in Figure 11. The polarization directions are marked with cyan arrows. The polarization showing green color in transmission light (maximum extinction) scatters back more red light in reflective light.

Figure S3 Sample SB-001 (Figure 10*a*) under polarized transmission light [marked with cyan arrows in (*a*) and (*b*)] and reflective light (*c*). Obvious red Tyndall effect can be observed under reflective light in the colored region of the sample, indicating the colors of natural Oregon sunstone are produced by light-scattering nanoparticles.

VIDEO-1 The absorption, scattering and extinction power maps plotted against wavelength and aspect ratio with the equatorial radius $\boldsymbol{a}$ continuously changing from 0 to 100 nm. Only the M_Z (E_Y) and E_Z maps are plotted, since the K_Z maps are almost identical as the M_Z maps as shown in Figure 4.

VIDEO-2 The absorption, scattering and extinction power maps plotted against wavelength and equatorial radius $\boldsymbol{a}$, with the aspect ratio $\frac{\boldsymbol{c}}{\boldsymbol{a}}$ continuously changing from 0.5 to 2. Only the M_Z (E_Y) and E_Z maps are plotted, since the K_Z maps are almost identical as the M_Z maps as shown in Figure 5 and Figure 6.