Supporting Information for

Laser-Induced Reshaping of Particles Aiming at Energy-Saving Applications

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1. Growth Mechanism of Spherical Particles by Laser Irradiation

Figure S1. Schematic illustration of the proposed laser-simulated surface tension energy release growth process, (a) one particle spherizing, (b) two particles coalescence and then spherizing.
2. The Coexistence of big spherical particles and nanoparticles after laser irradiation

Figure S2. A transmission electron microscope image of ZnO big spherical particles and ultrafine nanoparticles produced under laser fluency of 1.2 J pulse\(^{-1}\)cm\(^{-2}\). The big spherical particles were produced by the laser-induced reshaping process and the nanoparticles were produced by laser fragmentation\(^{R1}\) or laser ablation process\(^{R2}\).


3. XRD results of the ZnO particles before and after laser irradiation

Figure S3. XRD patterns of the raw ZnO powders (i) and the corresponding spherical particles (ii) after laser irradiation under an energy fluency of 0.4 J pulse\(^{-1}\)cm\(^2\).
4. The Friction-reduction Property of TiO₂ and CuO Spherical Particles as Lubricating Additives

![Graph showing friction coefficient variation with time for lubricating oil with different concentration of oxide particles measured with a thrust-ring tester.](image)

Figure S4. The friction coefficient variation with times for lubricating oil with different concentration of oxide particles measured with a thrust-ring tester. The mummers near the lines mean the mass concentration (wt%) of spherical particles in the lubricating oil. (a) TiO₂ spheres; (b) CuO spheres. R and S mean raw powders and spherical particles, respectively.