

Electronic Supplementary Material

Study on the mechanism of rapid formation of ultra-thick tribofilm by CeO₂ nano additive and ZDDP

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Table S1 Physical and chemical parameters of base oil.

Parameter	Base oil
	PAO6 (poly- α olefin)
Density (15 °C, g/cm ³)	0.826
Dynamic viscosity (mm ² /s)	
40 °C	30.60
100 °C	5.90
Viscosity index	135
Pour point (°C)	−68
Flash point (°C)	246
Acid value (mg KOH/g)	≤0.03

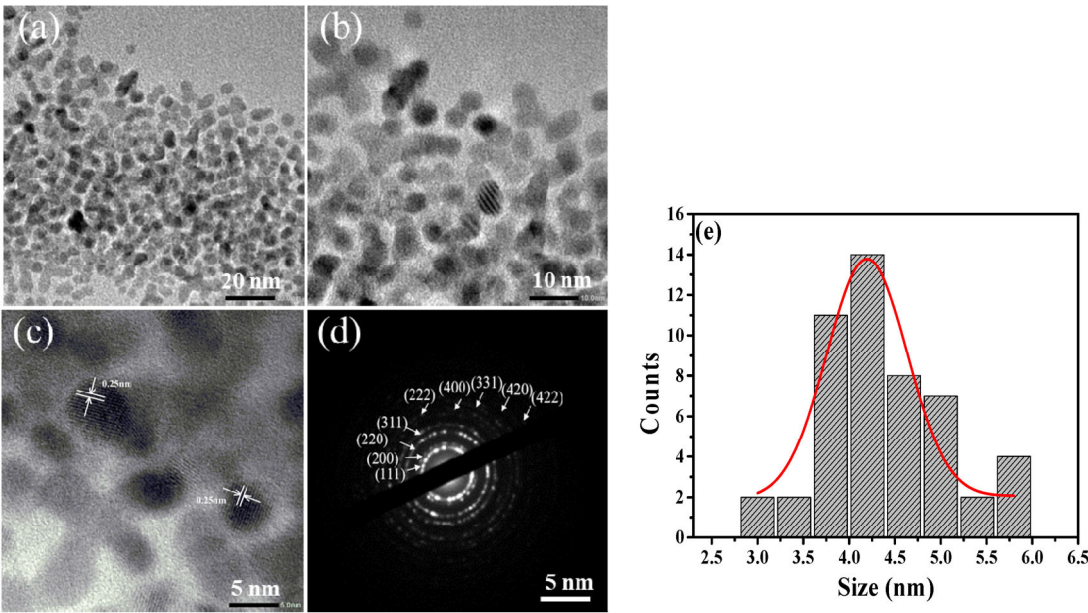


Fig. S1 TEM, HRTEM images, SAED pattern as well as particle size distribution map of OM-modified CeO₂ nanoparticles.

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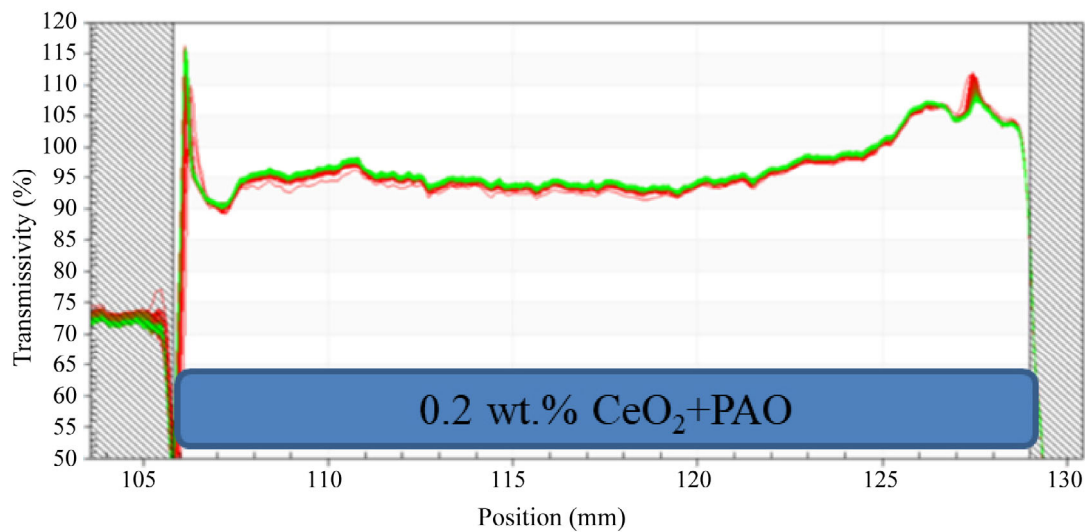


Fig. S2 Stability spectrum of OM-modified CeO₂ nanoparticles in PAO.

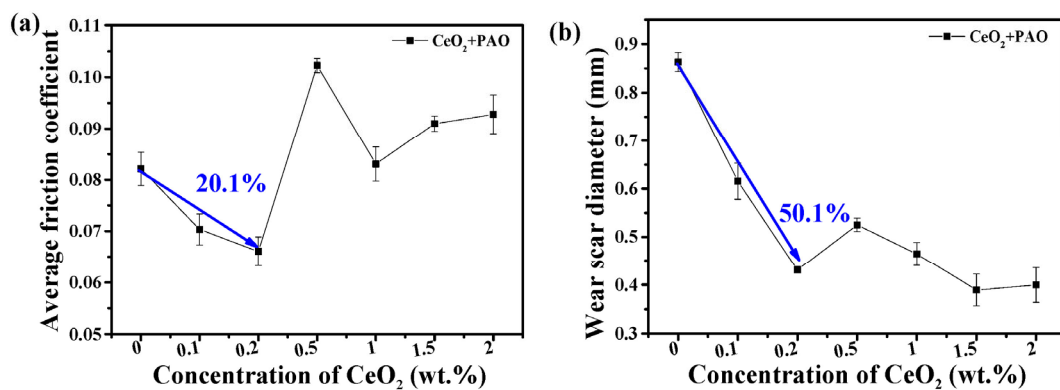


Fig. S3 Tribological properties of CeO₂ nanoparticles in PAO: (a) average COF, (b) average WSD.