

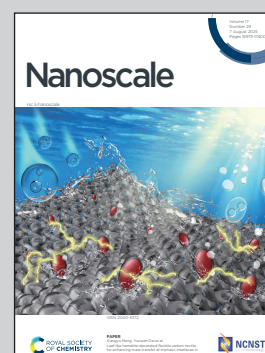
Showcasing research from Professor Zhenyu Zhang's laboratory, State Key Laboratory of High-performance Precision Manufacturing, Dalian University of Technology, Dalian 116024, China.

A close atomic surface of stainless steel produced by novel green chemical mechanical polishing using silica and lanthana mixed abrasives

Novel green CMP was developed, including silica, lanthana, malic acid, aminobutyric acid and hydrogen peroxide. Following this environmentally friendly CMP process, surface roughness S_a of stainless steel was reduced to 0.286 nm, with an MRR of 82.14 nm min⁻¹. X-ray photoelectron spectroscopy analysis demonstrates that hydrogen peroxide oxidized the surface of stainless steel, forming oxides. Malic acid then dissolved these oxides by releasing hydrogen ions. This innovatively green CMP suggests a fresh perspective on achieving fine surface roughness on stainless steel, simultaneously enhancing its wear and corrosion assistance.

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See Zhenyu Zhang, Hongxiu Zhou, Xiaofei Yang *et al.*, *Nanoscale*, 2025, **17**, 17097.