

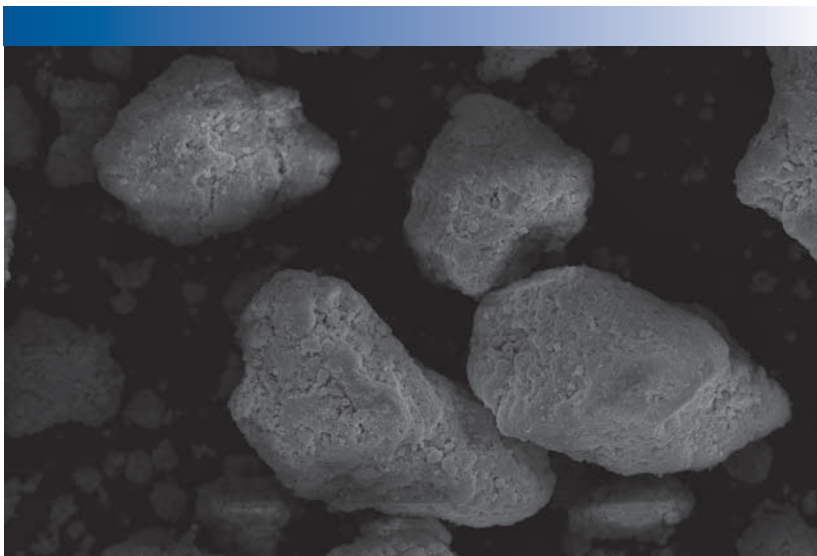
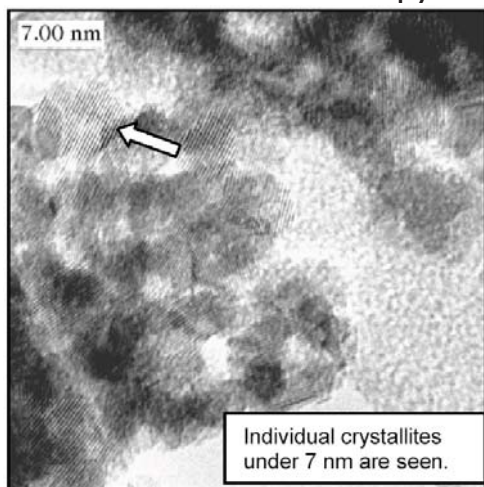
Cerium Oxide

NanoActive CeO₂ is produced using proprietary processes to obtain a high specific surface area, aggregated dry powder that can be dispersed in various carrier fluids to significantly reduce the particle size.

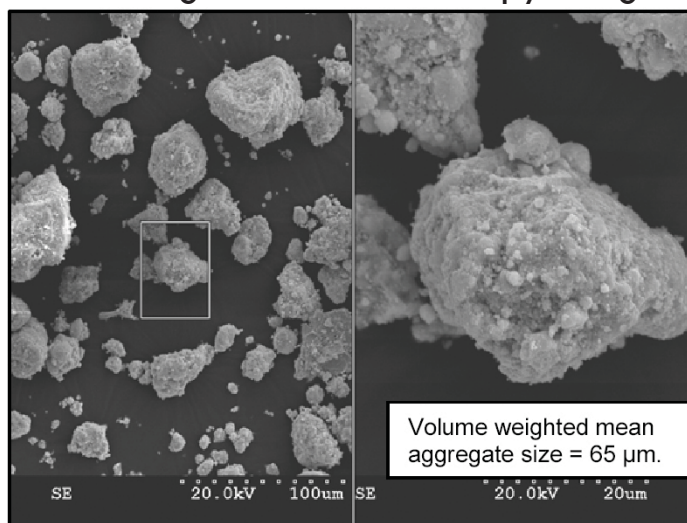
Typical Properties

Appearance/Color	Yellow Powder
Specific Surface Area (BET)	≥ 50 m ² /g
Crystallite Size	≤ 7 nm
Average Pore Diameter	70 Å
Total Pore Volume	≥ 0.1 cc/g
Bulk Density	2.2 g/cc
True Density	6.0 g/cc
Mean Aggregate Size, d _{0.5}	9.5 μm (wet)
Loss on Ignition	≤ 5%
Moisture Content	≤ 3%
Ce Content (Based on Metal)	> 99.7%

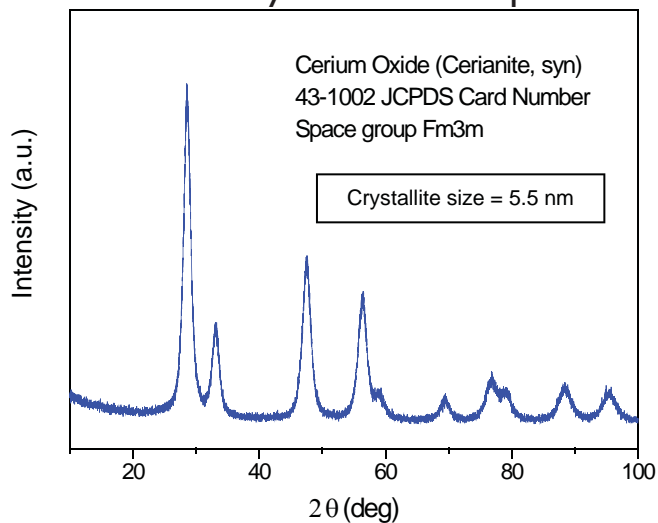
Transmission Electron Microscopy Image



Scanning Electron Microscopy Image



Powder X-ray Diffraction Spectrum



NanoActive materials exhibit a wide array of unusual properties. One of the unusual features is enhanced surface chemical reactivity. Just a few grams of a NanoActive material can have the surface area equivalent to that of a football field. Our NanoActive-S (suspensions) and NanoActive-G (granules) series provide the ability to adjust density and flow characteristics without compromising the high chemical reactivity of our NanoActive products.

Potential Applications	Nanotechnology Benefit
Catalysts <ul style="list-style-type: none"> Automotive: vehicle emission control Industrial: water-gas-shift catalysts SO₂ removal 	Increased activity due to smaller particle size (improved efficiency of catalytic converters) Increased water resistance
Enhancement of Near IR reflection	Higher reflection due to smaller particles and unique morphology
Industrial Coatings <ul style="list-style-type: none"> Weather proofing of metal, plastics, rubber and timber 	Improved transparency and invisible protection due to small particles
Polishing slurries <ul style="list-style-type: none"> General abrasives, chemical mechanical planarization (CMP) of semiconductors, optical polishing (precision optics), fiber optics polishing 	Less material required due to smaller particle size Better surface smoothness due to smaller particles (light is not disturbed by surface irregularities) Faster rate of surface polishing
Reactive dopants <ul style="list-style-type: none"> Cerium-doped glass to block UV radiation (≤ 350 nm); burners for halogen lamps, glass component in high temperature applications and where low expansions is needed 	Improved photostability against UV induced discoloration

Depending on Customer-specific needs NanoScale can supply its products as dry unfunctionalized powders, compacted powders (granules) or dispersions in various carrier fluids. The custom designed materials can be tested and characterized to meet Customer requirements.

Order

Product	Catalog Number	Quantity
NanoActive CeO ₂	AC006-0025-00NS	25 grams
	AC006-0100-00NS	100 grams
	AC006-1000-00NS	1 kilogram
NanoActive-G CeO ₂	AC306-0025-00NS	25 grams
	AC306-0100-00NS	100 grams
	AC306-1000-00NS	1 kilogram
NanoActive-S CeO ₂	AC016-0500-00NS	500 mL