

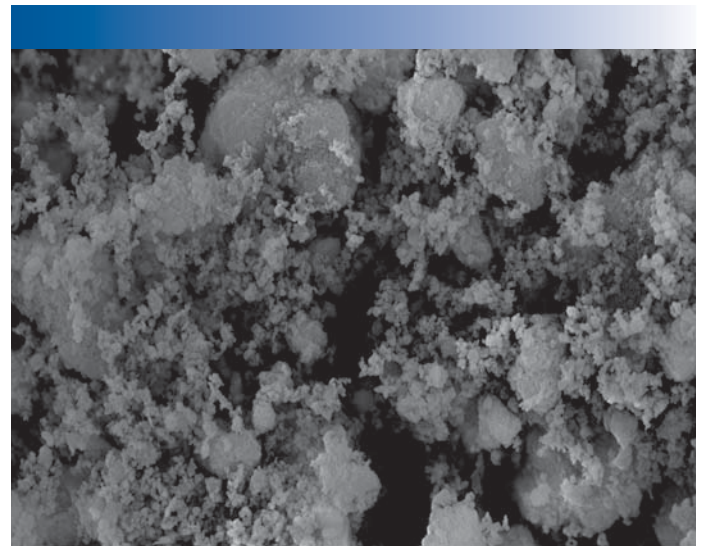
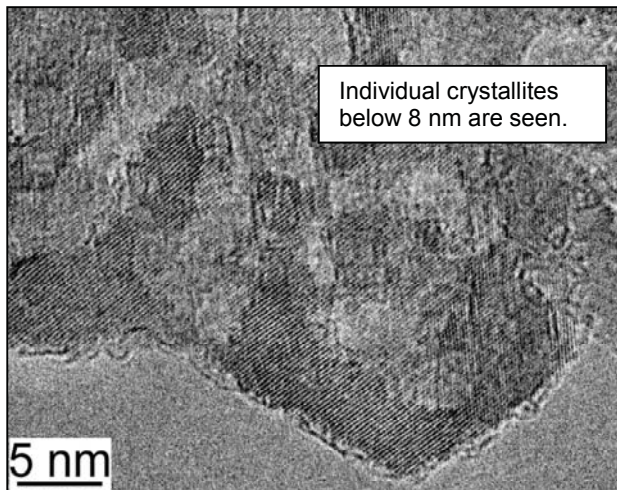
## Magnesium Oxide

NanoActive MgO is produced using proprietary processes to obtain high specific surface area, small crystallite size material possessing high chemical reactivity, particularly at elevated temperatures.

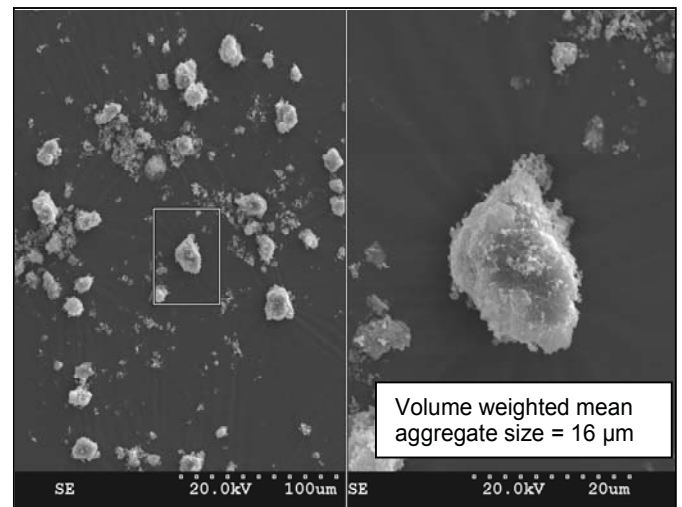
### Typical Properties

Appearance/Color	White Powder
Specific Surface Area (BET)	$\geq 230 \text{ m}^2/\text{g}$
Crystallite Size	$\leq 8 \text{ nm}$
Average Pore Diameter	50 Å
Total Pore Volume	$\geq 0.2 \text{ cc/g}$
Bulk Density	0.6 g/cc
True Density	3.2 g/cc
Mean Aggregate Size, d0.5	3.3 $\mu\text{m}$
Loss on Ignition	$\leq 8\%$
Moisture Content	$\leq 1\%$
Mg Content (Based on Metal)	$\geq 95\%$

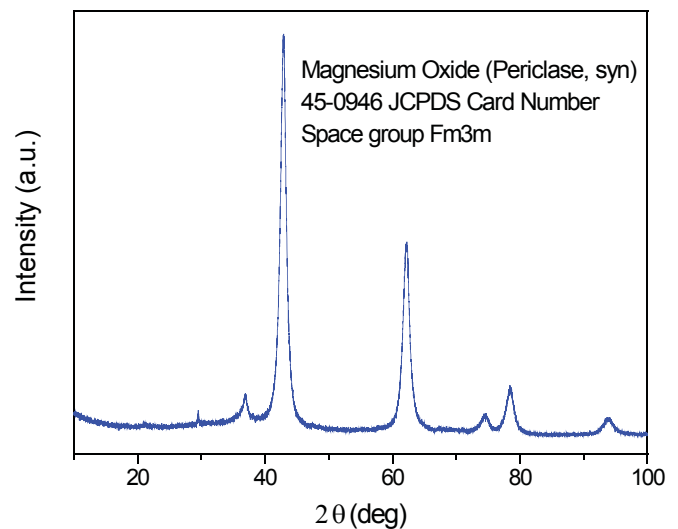
### Transmission Electron Microscopy Image



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 Benefits
Catalysts and catalyst supports Dehydrohalogenation, methane oxidation	Increased activity due to smaller particle size and high surface area Higher loading and better dispersion of the active species due to the high surface area of the support Increased selectivity due to defined pore structure of the support Increased wear resistance
Destructive adsorption of chemical warfare agents Room temperature destruction of VX, GD and HD with the formation of much safer by-products	Higher capacity Faster kinetics
Destructive adsorption of acid gases and polar organic molecules	High intrinsic surface reactivity and high surface areas
Fertilizers Source of essential magnesium for plant nutrition	Faster kinetics
Nanocomposites Filler, acid acceptor, thickener, catalyst and pigment extender	Decreased weight Improved physical & mechanical properties
Phosphor particle protecting layer (in plasma display panel) Protection of dielectric layer, maintaining a low breakdown voltage under neon or helium ion bombardment	Enhanced protection due to smaller particle sizes Longer display lifetime
Precursor for other magnesium chemicals Magnesium sulfate, nitrate, citrate stearate	Higher reactivity Synthesis of higher surface area materials products that might have new uses
Remediation of toxic waste Elevated temperature decomposition of phosphorus and halogenated compounds	Enhanced reactivity and capacity
Sintering aid	Smaller particles sinter at lower temperatures
Waste water treatment pH adjustment, precipitation of heavy metals, removal of phosphates	Higher reactivity and faster kinetics

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 MgO	AC002-0025-00NS	25 grams
	AC002-0100-00NS	100 grams
	AC002-1000-00NS	1 kilogram
NanoActive-G MgO	AC302-0025-00NS	25 grams
	AC302-0100-00NS	100 grams
	AC302-1000-00NS	1 kilogram