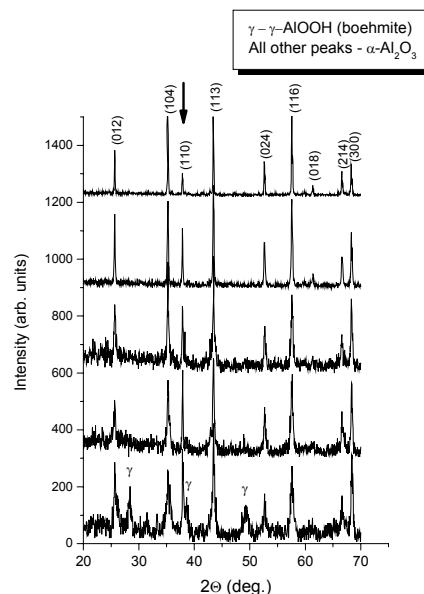
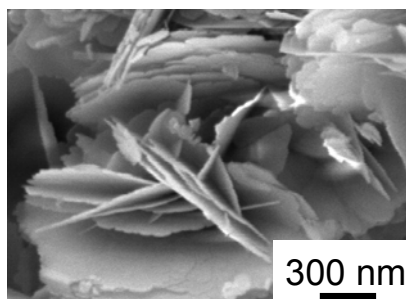
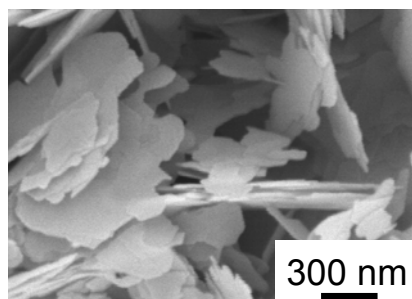
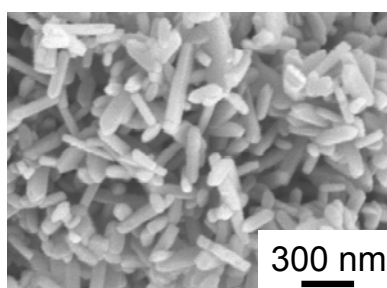
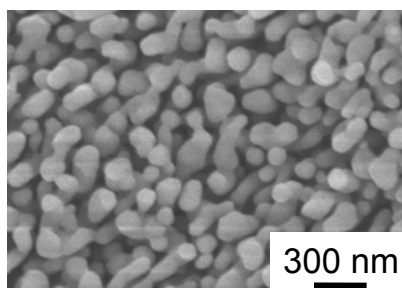


## ALPHA ALUMINA ( $\alpha$ -Al<sub>2</sub>O<sub>3</sub>) NANOSIZED POWDERS WITH TAILORED MORPHOLOGY

- APPLICATIONS:**
- ◆ Catalyst supports/carriers
  - ◆ Polishing, CMP
  - ◆ Composite reinforcements/fillers (metals, plastics, ceramics)
  - ◆ Corrosion resistant thermal insulation
  - ◆ Porous/textured alumina ceramics
  - ◆ Refractories, membranes, filters (for molten metals, hot gases)



Hydrothermal method is very useful to produce advanced  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> (corundum) nanosized powders with controlled sizes and morphologies (equiaxed, needles, nano-sheets). Sawyer's  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> nanosized powders have high phase purity, high BET surface areas, controlled aspect ratios of individual particles, and varying agglomeration levels. Moreover, dopants can easily be introduced into the corundum lattice or the surface can be functionalized.

### Properties of $\alpha$ -Al<sub>2</sub>O<sub>3</sub> (corundum) nanosized powders synthesized hydrothermally\*

Property	Equiaxed	Nano-sheets	Nano-sheets	Nano-needles
Crystal form	100% $\alpha$ -Al <sub>2</sub> O <sub>3</sub>	100% $\alpha$ -Al <sub>2</sub> O <sub>3</sub>	$\alpha$ -Al <sub>2</sub> O <sub>3</sub> + $\gamma$ -AlOOH	100% $\alpha$ -Al <sub>2</sub> O <sub>3</sub>
Orientation/faceting	random	(0001) facets	(0001) facets	c-axis elongated
Aspect ratio (-)	1.0	10-200	50-200	2-10
Diameter/thickness (nm)	100-250	10-35	10-20	35-100
Length/width ( $\mu$ m)	N/A	0.5-3.0	0.5-2.0	0.2-1.0
BET surface area (m <sup>2</sup> /g)	9-27	10-25	30-40	-
Chemical purity (%)	>99.8	97-99+	95-99+	-

\*Powders with other sizes, morphologies, purity levels, and dopants may be available upon request.  
 Dispersions may be available upon request