

# Nanoparticle Information Library



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# NIL History

- Established in 2004 by NIOSH and its national and international partners
- Is part of the NIOSH Nanotechnology Research Program ([www.cdc.gov/niosh/topics/nanotech](http://www.cdc.gov/niosh/topics/nanotech))
- Is a searchable database of nanoparticle properties and associated health and safety information
- Is designed to help occupational health professionals, industrial users, worker groups, and researchers organize and share information on nanomaterials
- Current hosting, administration, and maintenance of the NIL web resource is being conducted by Oregon State University (OSU) in conjunction with its program to characterize nanomaterials

# NIL Content

- Nanomaterial composition
- Method of production
- Particle size, surface area, and morphology (included scanning, transmission, or other electron micrographic images)
- Demonstrated or intended applications of the nanomaterials
- Availability for research or commercial applications
- Associated or relevant publications and links to health and safety information
- Points of contact for additional details or partnering.

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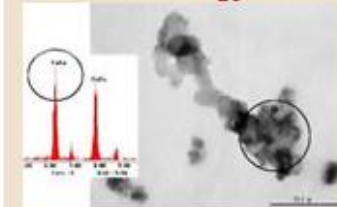
### Featured Contributors

**Apparao Rao**  
Clemson University  
Professor Rao's laboratory at Clemson University focuses its research primarily on the synthesis and characterization of carbon nanotubes.



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### Nanotechnology



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**Abstract:** Carbon nanotubes (CNTs) are synthesized utilizing novel, electrically-enhanced, oxy-fuel flame-based, catalytic chemical...

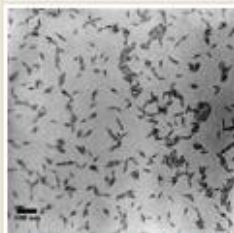
**Structure:** [Nano Tubes](#)

**Origin:** [Chemical Vapor Deposition](#)

**Primary Element:** [Carbon](#)

**Contributor:** [Stephen D. Tse](#) Rutgers University-Mechanical & Aerospace Engineering

**Added to NIL:** 9/1/2005



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**Abstract:** My research in the Krauss group investigates the charge properties of two-dimensionally quantum confined semiconductor...

**Structure:** [Nano Rods](#)

**Origin:** [Chemical Synthesis](#)

**Primary Element:** [Cadmium](#)

**Contributor:** [Todd D. Krauss](#) University of Rochester

**Added to NIL:** 8/29/2005

### Nanoparticle Options

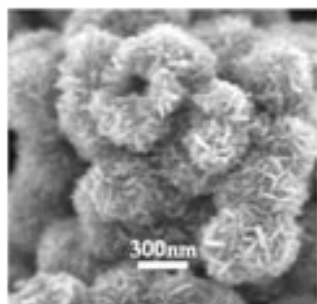
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**Name:**

None specified

**Element 1:** Carbon

**Structure:**

Spherical

**PPMD:** 300 nm

**Origin:**

Chemical Synthesis

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**Contributor:** [Yulan Wang](#), Chinese Academy of Sciences

**Related Website:**

<http://www.rsc.org/publishing/journals/JM/article.asp?doi=b413988g>

**Research Abstract:**

Hollow porous carbon nanospheres with large surface area and stability were self-assembled using gentle oxidation of fullerenes. The C60 framework, functional groups, composition, structure, surface area and stability of the nanospheres were investigated using scanning electron microscopy, X-ray photoelectron spectroscopy, FT-IR spectroscopy, solid state <sup>13</sup>C NMR spectroscopy, high resolution transmission electron microscopy, adsorption and thermogravimetric analysis. The narrow distribution of the nanospheres was centred on 8 nm, the BET surface area was 222.63 m<sup>2</sup> g<sup>-1</sup>, and the residue at 1000 °C was 75%. Thus, a novel nanomaterial with the highest surface area and highest stability in the family of fullerenes has been prepared

**Publications:**

1. Yulan Wang, Yangjie Wu. Isokinetic correlation analysis of the series of electrophilic substitution reactions of o-substituted phenylmercurials, Science in China (Series B), 2001, 44(2): 182-19
2. Yulan Wang, Yangjie Wu. Effects of o-Substituents in Protonolysis of Aryllmercuric Chlorides by HCl in Absolute Ethanol, Collection of Czechoslovak Chemical Communications.2000, 65: 35-46
3. Yulan Wang, Jianmin Mao, Mengshen Cai, Stereoselective Synthesis of a New Kind of natural C<sub>60</sub> fullerene, synth

**Related Industries:**

None specified

**Related Occupations:**

None specified

**Safety & Health Issues:**

None specified at this time

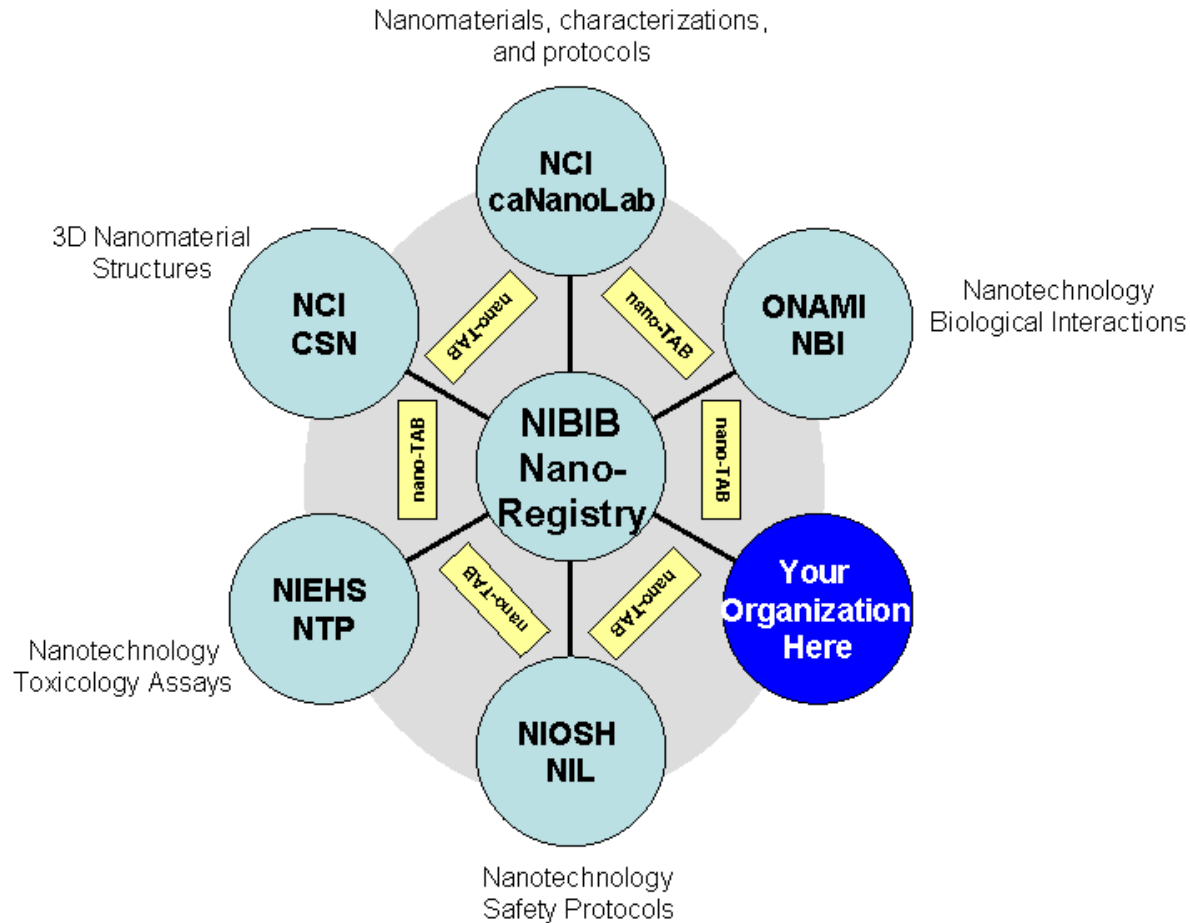
# Intended Value

- Meaningful examples of the differences in nanomaterials properties that can potentially influence toxicity or the efficacy of control;
- Practical examples of nanomaterials and nanomaterial-associated properties to illustrate and support proposed or internationally agreed upon terminology and nomenclature, in particular, the terminology and nomenclature development initiatives of the International Standards Organization Technical Committee 229 on Nanotechnologies ([www.iso.org](http://www.iso.org));
- Support for the development of technically defensible strategies for grouping nanomaterials into property-based categories for designing and applying controls;
- Catalogs of comprehensive and cost-effective measurement and assay methods for characterizing, classifying, and conducting exposure assessment for nanomaterials;

# Intended Value (continued)

- Support for assembly of comprehensive suites of reference materials that span the range of nanomaterials actually being used, or likely to be used in commerce, or can respond to specific needs for calibration of instruments or methods or for the conduct of meaningful and intercomparable toxicology studies;
- Providing validated examples of effective control technologies for material-specific and process-specific applications; and
- Fostering of insights and effective strategies to anticipate, recognize, evaluate, control, and confirm the adequacy of existing and emerging nanomaterial environmental health and safety risk management.

# NIL is part of our community-driven effort



*We invite your participation*



# Questions ?



***Mark D. Hoover, PhD, CHP, CIH***

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