



## The Nature Research solution for nanotechnology

- Centralized nanotech-related articles in one space
- Insights into the content that is closely related to the search input
- Curated nanomaterial summaries from top journals worldwide

### A nanomaterial summary includes



Nanostructure Type



Size



Composition



Properties



Applications



Preparation



Characterization



Toxicity



Patent Claims

### User benefits from nano.nature.com

*Find nanotechnology information precisely without looking into the full text*

*Information on similar nanomaterials is compiled into summaries from multiple sources*



*Preparation steps for nanomaterials can be easily found and visualized*

*Nanomaterials with specific properties and application can be quickly enlisted*

## Smart Search

Nano combines the key features of a database and an Abstract & Indexing discovery tool supported by nano-specific functionality.

The screenshot displays the Nano search interface with various filters on the left and search results on the right. The filters include:

- Nanostructure:** Nanostructured materials (78,508), Nanoparticles (63,319), Nanofilms (16,674), Nanoporous materials (10,521), Nanowires (9,800). [See all \(32\)](#)
- Size:** 0 - 50000 nm
- Property:** Search, Current density (11,851), Catalytic activity (11,476), Cyclic voltammogram (10,063), Open-circuit voltage (8,904), Fill factor (8,385). [See the top 100](#)
- Application:** Power generation (18,889)
- Publisher:** Elsevier (146,299), RSC Publishing (109,430), Springer (93,209), ACS Publications (38,187), NPG (33,230). [See all \(24\)](#)
- Journal:** RSC Advances (31,309), PLOS ONE (23,741), Journal of Alloys and Compounds (19,221), Applied Surface Science (17,006), Scientific Reports (16,169). [See the top 100](#)
- Publication Year:** 2015 (85,365), 2016 (81,855), 2014 (74,058), 2013 (61,762), 2012 (52,404). [See all \(9\)](#)

The search results show a list of articles related to "multilayer". The top result is "Deep structure beneath the southwestern section of the Longmenshan fault zone and gold-dielectric-gold multilayer nanoshell surrounded by silver shell" by Linjie Zhou, Jingya Xie, and Jianping Chen, published in Chinese Science Bulletin (2014). The article discusses all-optical wavelength conversion in a microdisk resonator integrated with interleaved p-n junctions. The results are refined by composition (gold, dielectric material, gold), nanostructure (nanoparticles), and diameter (0 - 30 nm).

Gain insight into the content that is closely related to the search input. Insights from the same article could be different based on the search inputs.

The screenshot displays the Nano search interface with search results for "zno nanoparticles" and "mgo nanoparticles". The results show a list of articles related to "O2 adsorption dependent photoluminescence emission from metal oxide nanoparticles" by Amir R. Gheisi, Chris Neygandhi, and Andreas K. Sternig, published in Physical Chemistry Chemical Physics (2014). The article discusses optical properties of metal oxide nanoparticles and photoluminescence spectroscopy. The results are refined by composition (ZnO, MgO), nanostructure (nanoparticles), and diameter (0 - 30 nm).

The screenshot displays the Nano search interface with search results for "metal oxide nanoparticles" and "adsorption". The results show a list of articles related to "O2 adsorption dependent photoluminescence emission from metal oxide nanoparticles" by Amir R. Gheisi, Chris Neygandhi, and Andreas K. Sternig, published in Physical Chemistry Chemical Physics (2014). The article discusses optical properties of metal oxide nanoparticles and photoluminescence spectroscopy. The results are refined by composition (Metal Oxide), nanostructure (Nanoparticles), and diameter (0 - 30 nm).

# Manually curated summaries of nanomaterials — continuously updated by nanotechnology experts

Data referring to similar nanomaterials is compiled from high-impact journals and patents into well structured, comprehensive summaries. For example, gold nanoparticles:

## gold nanoparticles

Composition: gold

Nanostructure: nanoparticles | Diameter: 0 - 30 nm

Based on 1668 articles and 23 patents (most recent: 2017)

Other information: Characterization (1588) | Preparation (1094) | Property (684) | Toxicity (401) | Application (365)



### Properties

| Property                | Value                       | Source                           |
|-------------------------|-----------------------------|----------------------------------|
| electrical conductivity | ~ 0.012 S/cm<br>[~ 1.2 S/m] | Glen DeLoid <i>et al.</i> 2014   |
| electrical resistance   | 1,470 $\Omega$              | Yilmaz, Cihan <i>et al.</i> 2014 |
| electrical resistance   | 11.9 $\Omega$               | Yilmaz, Cihan <i>et al.</i> 2014 |
| electrical resistivity  | 0.000006 $\Omega \cdot m$   | Yilmaz, Cihan <i>et al.</i> 2014 |

### Characterization methods



| Method                          | Dependent on          | Source                                                                                               |
|---------------------------------|-----------------------|------------------------------------------------------------------------------------------------------|
| Raman spectroscopy              | –                     | Zhao, Min <i>et al.</i> 2015<br>Marioara Avram <i>et al.</i> 2012<br>S. L. Smitha <i>et al.</i> 2012 |
| UV-Vis-NIR optical spectroscopy | doping charge density | A. Manjavacas and F.J. García de Abajo 2014                                                          |
| UV-Vis-NIR optical spectroscopy | media aging time      | A. Stojilković <i>et al.</i> 2016                                                                    |



### Toxicity and biological effects

| Test outcome                      | Biological system              | Source                            |
|-----------------------------------|--------------------------------|-----------------------------------|
| acceleration of cell migration    | Rat Glioma 2 cell              | Rahman, Wan <i>et al.</i> 2011    |
| acceleration of cell migration    | bovine aortic endothelial cell | Rahman, Wan <i>et al.</i> 2011    |
| accumulate at the plasma membrane | HeLa cells                     | Li Shang <i>et al.</i> 2014       |
| accumulation in gut               | Daphnia magna                  | Kyle D. Gilroy <i>et al.</i> 2014 |

### Preparation



### Applications

| Application           | Area                           | Source                            |
|-----------------------|--------------------------------|-----------------------------------|
| bisphenol A detection | sensors (excluding biosensors) | Mei, Zhanlong <i>et al.</i> 2013  |
| blood clotting        | medicine/veterinary            | Hee Kyeong Kim <i>et al.</i> 2013 |
| cancer cell detection | diagnostics                    | Xiangyan Zhou <i>et al.</i> 2014  |

### Patent claims



| Patent                                 | Claims                                                                                                                                            |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| PCT patent WO/2014/045055, 27 Mar 2014 | The nanomaterial is claimed together with its method of preparation<br>A specific method of preparation is claimed for the described nanomaterial |
| PCT patent WO/2014/039821, 13 Mar 2014 | A specific method of preparation is claimed for the described nanomaterial                                                                        |
| U.S. patent US20120244322, 27 Sep 2012 | The nanomaterial is claimed                                                                                                                       |

Please note: selected key data is displayed to fit the page width.

Full data can be found at <https://nano.nature.com/nano/GR-M21079>.

## What our Nano advisory board members say?



Nano is an emerging and very powerful research tool. It allows researchers to obtain and compare the characteristics of the full spectrum of nanomaterials, as well as the composition and preparation methods for nano-enabled devices. It will provide nano-scientists with the clarity and deep understanding that the Mendeleev table once provided to chemists. - **Dr. Jens Kroeger, Chief Technology Officer, Raymor and NanoIntegris**

Nanotechnology research and development has been rising on a sharp slope across virtually all scientific disciplines and industries. The result has been a rapidly growing body of information in disparate places that is not readily and efficiently accessible. Researchers need a multidisciplinary database that brings this vast body of data together in an organized and usable way in one place. Working together with other scientists to develop a research solution that can meet this need, through Nano's External Advisory Board, has made me confident that this is a product that can deliver huge value to the research community. - **Dr. Omid Farokhzad, Associate Professor, Harvard Medical School**



## Key Benefits

- **Unique** research solution specific to nanotechnology
- **Manually created nanomaterial summaries** from top peer-reviewed journals — evaluated by nanotechnology experts
- **Links to the original data source**
- **Gain quick insight** into the content that is closely related to the search input
- **Up-to-date content** thanks to regular additions
- **Efficient search results** due to precise search tools and filter options

## Availability and Access

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