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## Ceder



[Gerbrand Ceder](#)

Visiting Professor of Materials Science and Engineering

Metallurgy and Materials Science Engineer, Catholic University of Leuven, Belgium, 1988

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## Disciplines:

- Computational  
Materials  
Science
- Energy Storage
- Nanotechnology
- Thermodynamic  
s

## Research:

Professor Ceder's group specializes in designing and understanding advanced materials by means of computational modeling and experimental research. By combining theoretical and experimental efforts in one group, the effectiveness of both is enhanced. First principles computations, whereby the properties of materials are predicted from basic physics, has become one of the most powerful tools in Materials Research and Design. This group develops these tools and applies them to technologically relevant problems, often in collaboration with key industrial or government partners. Materials phenomena include: phase stability and cohesion in solids, diffusion, interaction of matter with radiation, and phase transformation. Applications have included: high temperature superconductors, electrodes for rechargeable batteries, and high temperature alloys. The environment is highly multidisciplinary, containing students with a range of backgrounds making use of cutting edge techniques from such fields as materials science, engineering, chemistry, physics, computer science, and mathematics.

## Related News:



[Mystery solved: Why seashells' mineral forms differently in seawater](#)

Monday, March 2, 2015 - 7:00pm

Century-old riddle about aragonite formation is unraveled by scientists' atomistic simulation. Learn more from the [MIT News Office](#).

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### [Disordered materials hold promise for better batteries](#)

Wednesday, January 8, 2014 - 7:00pm

MIT researchers find that contrary to conventional wisdom, cathodes made of disordered lithium compounds can perform better than perfectly ordered ones. See the...



### [Materials Genome Project continues to grow](#)

Sunday, May 5, 2013 - 8:00pm

In 2006, Professor Gerd Ceder began the Materials Genome Project— which is now has tens of thousands of compounds in a database used by more than 3000 researchers. See the...



### [Technology Review reports on tomorrow's breakthroughs](#)

Monday, December 19, 2011 - 7:00pm

See this article in [Technology Review](#) to learn more about manufacturing in the US. Among those interviewed were Professors Ceder and Chiang and Professor Erica Fuchs of Carnegie Mellon who is an...



### [The Materials Project, an immensely powerful new research tool](#)

Monday, December 19, 2011 - 7:00pm

Several years ago, Prof. Gerd Ceder began building a database of materials properties, combining data that had previously been scattered in multiple locations or was unavailable. The [Materials Project](#) is now open to all in a partnership...



### [Materials Project provides database of materials properties](#)

Thursday, November 3, 2011 - 8:00pm

The Materials Project, a collaboration between MIT and LBNL, uses computers to determine and predict the properties of a material, making it possible to find the right material, without months or years of experimentation. This

project grew out of research in Prof. Gerd Ceder's group and was...

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### [Prof. Ceder to present NSF Lecture](#)

Sunday, October 30, 2011 - 8:00pm

The NSF invites the public to a series of lectures that aim to promote discussion of scientific issues which will have a long impact on our society.

Prof. Ceder will present the first lecture, "Large-Scale Computational Materials Design: The Materials Genome Program at MIT," on Nov. 7, at 2:00...

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### [New analysis of common battery cathodes](#)

Thursday, August 11, 2011 - 8:00pm

Prof. Ceder and his collaborators have developed a new understanding of a high-performing cathode compound, which could facilitate rapid evaluation of improved alternatives. Learn more from the [MIT...](#)

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### [DMSE faculty participate in Manufacturing Round Table discussion](#)

Wednesday, March 31, 2010 - 8:00pm

Prof. Gerd Ceder and Prof. Christine Ortiz were participants in an MIT roundtable discussion titled, The Future of Manufacturing — Advanced Technologies. More than a dozen of the Institute's faculty shared converging ideas about how to reinvigorate America's goods-producing businesses....

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### [Battery research from the Ceder Group](#)

Thursday, January 21, 2010 - 7:00pm

[The Independent](#) wrote about new technologies in rechargeable batteries, including attempts to speed up recharging....

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### [Washington Post interviews Prof. Ceder on battery life](#)

Wednesday, October 28, 2009 - 8:00pm

Prof. Gerd Ceder explains his work on faster charge and discharge for batteries to the [Washington Post](#).

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### [Prof. Ceder awarded MRS Medal](#)

Tuesday, September 15, 2009 - 8:00pm

The MRS Medal is awarded for a specific outstanding recent discovery or advancement which has a major impact on the progress of a materials-related field. This year's winner is Gerbrand Ceder, and the award will be presented during the Materials Research Society Fall Meeting in Boston, Dec. 1....

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### [MIT Energy Initiative Seed Grants Announced](#)

Tuesday, September 30, 2008 - 8:00pm

The MIT Energy Initiative's second round of seed grants for energy research, announced this week, will go toward a wide array of research topics ranging from micro-hydropower and solar-thermal power projects for developing countries, to the development of novel materials for insulation or for...

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[Ellen Swallow Richards, MIT's first alumna, was the wife of Robert H. Richards, the first head of Course III.](#)