

Frontiers of Materials Research: A Decadal Survey

UMC Meeting, March 2018

The National Academies of Sciences, Engineering and Medicine will conduct:

Frontiers of Materials Research: A Decadal Survey

by the request of the Department of Energy and the National Science Foundation.

The committee's final report will target an audience including the sponsors and other federal agencies that support materials research, science policymakers, and researchers in materials research and other fields.

The National Academies of Sciences, Engineering and Medicine

Frontiers of Materials Research: A Decadal Survey

CONFIDENTIALITY

Committee meetings, particularly as the committee gathers information, are usually open to interested individuals and the news media. However, meetings are closed when the committee is deliberating to develop its findings and during discussion of financial and personnel matters. Closed meetings are not open to the public or to any person who is not a committee member or an official, agent, or employee of the Academies.

Reports are the product of the institution, not of the committee alone. Committee deliberations, drafts of the report in progress, and tentative conclusions all are confidential until a completed report passes through review and receives sign-off by the Report Review Committee and by the major unit responsible for the study. A cardinal rule to keep in mind: Until the review process has been satisfactorily completed, the document is not an official report of the National Academies. Conclusions and recommendations can change up to the final sign-off.

The study is led by:

The Board on Physics and Astronomy

Director: James Lancaster

Helps both the science community and society understand what is needed to continue the advance of physics and astronomy and why doing so is important.

The Materials and Manufacturing Board

Director: James Lancaster

The mission of NMMB is to provide objective, independent assessments of the current state of materials and manufacturing research and the applications of new and existing materials in innovative ways, including pilot-scale and large-scale manufacturing, the design of new devices, and disposal.

Study Director Erik B. Svedberg, Senior Program Officer in the Materials and Manufacturing area at the National Academies of Sciences, Engineering and Medicine.

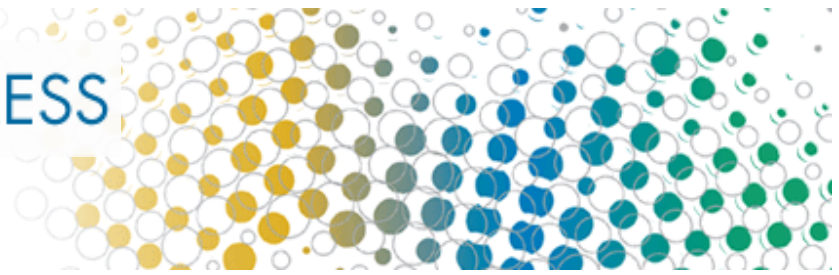
Three organizations comprise the Academies:

the National Academy of Sciences,
the National Academy of Engineering,
the National Academy of Medicine

Known collectively as the National Academies of Sciences, Engineering and Medicine,

Produces reports that shape policies, inform public opinion, and advance the pursuit of science, engineering, and medicine.





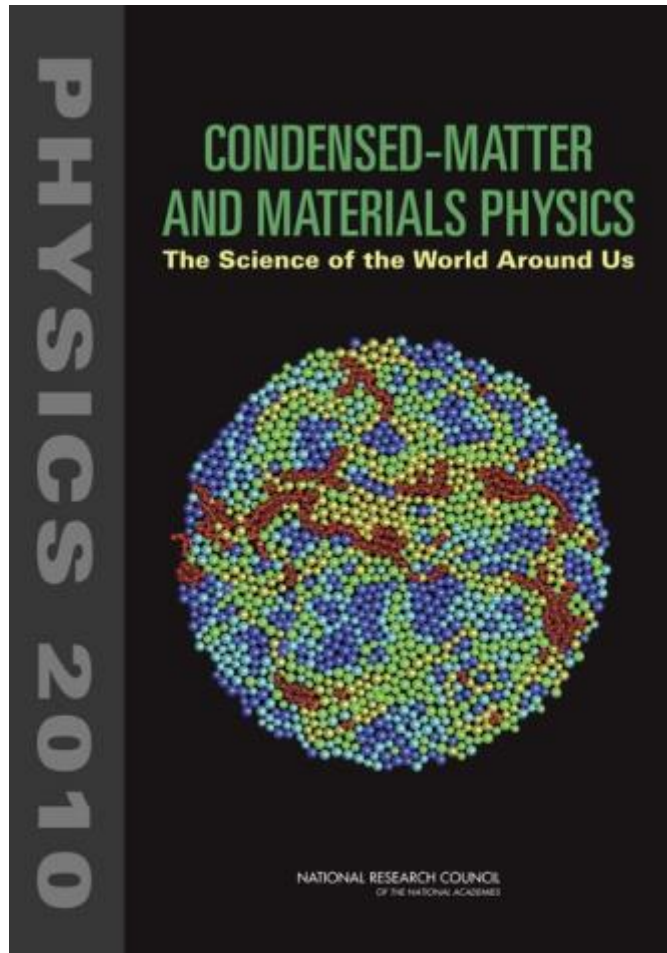
Publishes ~ 200 new reports every year

Maintain a backlist of 9,077 titles:

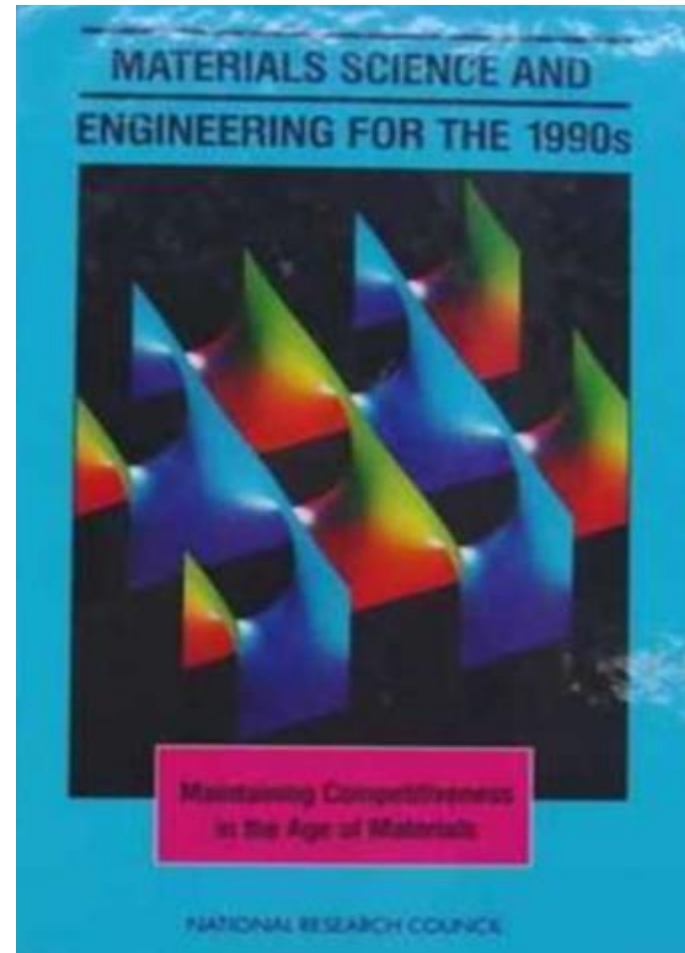


<https://www.nap.edu/>

(2007)



(1989)



The Committee:

Prof.	Chaikin	Paul	New York University
Prof.	Ding	Hong	Beijing National Laboratory
Prof.	Faber	Katherine	California Institute of Technology
Prof.	Greene	Laura	National High Magnetic Field Laboratory
Prof.	Hammond	Paula	Massachusetts Institute of Technology (MIT)
Dr.	Heckle	Christine	Corning Inc.
Prof.	Hemker	Kevin	Johns Hopkins University
Prof.	Heremans	Joseph	Ohio State University
Dr.	Jones	Barbara	IBM
Prof.	Lubensky	Tom	University of Pennsylvania
Prof.	Mason	Nadya	University of Illinois at Urbana-Champaign
Dr.	Mason	Thomas	Battelle Memorial Institute
Prof.	Rahman	Talat Shahnaz	University of Central Florida
Prof.	Reichmanis	Elsa	Georgia Institute of Technology
Prof.	Robertson	Ian	University of Wisconsin-Madison
Dr.	Sarrao	John	Los Alamos National Laboratory
Prof.	Sinnott	Susan	Pennsylvania State University
Dr.	Stemmer	Susanne	University of California, Santa Barbara
Prof.	Stupp	Samuel	Northwestern University
Prof.	Tirrell	Matthew	Argonne National Laboratory
Dr.	Tolle	Tia	Boeing
Prof.	Weaver	Mark	University of Alabama
Dr.	Younkin	Todd	Intel Assignee at SRC
Prof.	Zinkle	Steven	University of Tennessee

Statement of Task:

The Academies shall prepare a report that will articulate the status and promising future directions of materials research (MR) in the United States in the context of similar efforts world-wide.

For this assessment, MR will be considered broadly in terms of material type, forms/structure, property, and phenomenon, as well as the full breadth of approaches to MR (e.g., experiment, theory, computation, modeling and simulation, instrument/technique development, synthesis, characterization, etc.).

In particular, the report will . . .

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Identify fields in MR that may be good candidates for transition to support by other disciplines, applied R&D sponsors, or industry;

Identify the impacts that MR has had and is expected to have on emerging technologies, national needs, and science, broadly;

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Evaluate recent trends in investments in MR in the United States relative to similar research that is taking place internationally by using a limited number of case studies of representative areas of MR that have either experienced significant recent growth or are anticipated to see significant near-term growth.

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Evaluate recent trends in investments in MR in the United States relative to similar research that is taking place internationally by using a limited number of case studies of representative areas of MR that have either experienced significant recent growth or are anticipated to see significant near-term growth.

Based on those trends, recommend steps NSF and DOE might take to secure progress and to enhance collaboration and coordination of such research support, where appropriate, for identified subfields of MR.

Town Halls, Sustained engagement with the materials research communities

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TMS 2017 Tuesday, February 28 from 5:00 - 7:00 pm

APS March Meeting 2017, March 16 from 3:30 - 4:30pm

MRS Spring Meeting , April 19, from 3:00 pm - 5:00 pm

ACerS, May 22, 6:00 PM - 7:00 PM

SPIE Optics + Photonics 2017 - 6 - 10 August

OSA, CLEO 14 - 19 May 2017

ACS 254th, August 20-24, 2017

AVS 64th November 1st, 2017

MRS Fall Meeting 2017, November 29, 2017: 3:00 PM - 5:00 PM

Virtual Town Hall, December 12, 2017: 2:00 PM - 3:00 PM

We plan to brief and have the report to the sponsors in mid- to late-summer, a week to 10 days before it's released to the public.

We also hope to have a half or one day release event, as the report is made available to the public.