

*Report of the Subcommittee
on*
Materials Instrumentation

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Co-Chairs

MPSAC Meeting
April 3-4, 2014
Arlington, VA



National Science Foundation

Directorate for Mathematical & Physical Sciences (MPS)

Charge Guidelines

Assuming a flat facilities budget, where should NSF invest for greatest impact on science advances (as opposed to paper production) across all materials categories, including biological materials, polymers, ceramics, metallurgy, solid state and materials chemistry, condensed matter physics and condensed matter and materials theory.

Consider existing major NSF multi-user facilities and other potential mid-scale investments, including electron microscopy, materials synthesis, crystal growth, and modeling in addition to characterization. Among these possible investments, which will produce the greatest impact on science advances?

Consider NSF investments in the context of other agency investments, such as DOE user facilities.



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Timeline

Spring 2013 subcommittee established

Conference calls

May 22 – 3:30-4:30 p.m. EDT

June 14 – 12:00-1:00 p.m. EDT

July 9 – 1:00-2:00 p.m. EDT

August 20 – 1:00-2:00 p.m. EDT

Oct 8-9, 2013 Workshop planned, cancelled due to government shutdown

Jan 11-12, 2014 Workshop rescheduled (agenda follows)

Feb 17, 2014 Conference call

Mar 7, 2014 Conference call

Mar 26, 2014 In-person meeting, Arlington VA

July 2014 Report complete (expected)



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Agenda
NSF Materials Instrumentation Workshop
Marriott Residence Inn, 650 North Quincy Street , Arlington, VA
January 11-12, 2014

January 11, Morning Session

8:45 - 10:45 am: Session A – Overview

Summary of NSF Mat 2022 report findings – Murray Gibson, NEU – 30 min

Importance of materials research facilities for US research and economy, DOE role – Pat Dehmer, DOE - 30 min

Biology/biomaterials talk – importance of materials research facilities – Pupa Gilbert , U. Wisconsin - 30 min

Nanosci/tech talk – importance of materials research facilities – Stephen Campbell, U Minnesota – 30 min

10:45-11:00 am: Coffee break

11:00 am - 12:00 pm: Session B – DMR facilities and materials research needs, funded major facilities past and present

NSF DMR funded materials facilities, past accomplishments and future potential*

 CHESS – Joel Brock, Cornell 20 min + 10 min Q&A

 NHFML – Gregory Boebinger, Florida State U. 20 min + 10 min Q&A

12:00 – 1:00 pm: Lunch

1:00 - 2:30 pm: Session C – Continued DMR funded major facilities past and present,

NSF DMR funded materials facilities, past accomplishments and future potential*

 NIST partnership – Rob Dimeo, NIST 20 min + 10 min Q&A

 SRC - Tai Chiang, U. Wisconsin – 20 min + 10 min Q&A

 General discussion – *open meeting 30 min*

2:30 – 3:00 pm – Coffee Break, closed meeting – committee discussion

Agenda (continued)
NSF Materials Instrumentation Workshop
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January 11-12, 2014

January 11, Late Afternoon Session

3:00 - 4:30 pm: Session D – Novel materials facilities concepts and opportunities and how they are currently funded in the US

Future of higher harmonic light sources and their applications in materials science - Margaret Murnane, JILA 20 min + 10min Q&A

Future U.S. X-ray light source facilities, and the international scene – John Hemminger, UCal, Irvine 20 min + 10 min Q&A

Theory and Simulation of materials - what facilities or infrastructure is needed to advance the field faster – Peter Voorhees, NWU, 20 min + 10 min Q&A

4:30 - 5:45 pm: Community input and general open discussion -

January 12, Morning Session

8:00 - 10:00 am: Session E – International materials facilities developments

International picture – new developments in light sources - Yves Petroff, LNLS 20 min + 10 min Q&A

International picture - new developments in TEM facilities - Nigel Browning, PNNL 20 min + 10 min Q&A

International picture – materials synthesis and characterization – Hard Materials – Charles Ahn, Yale 20 min + 10 min Q&A

International picture – materials synthesis and characterization – Soft Materials – Frank Bates, UMN 20 min + 10 min Q&A

10:00-10:30: Coffee Break

10:30 – 12:00 am: Community input and general open discussion

Status

Lively discussion at Workshop, conference calls,
and follow up in-person meeting

Report outlined and partially drafted

Some conclusions still under discussion

Expect to finish by July 2014



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