



# UNIVERSITY MATERIALS COUNCIL

May 17-18, 2017

Keck Center - DC

# UMC EXECUTIVE COMMITTEE

## 2016-17

**Chair:** Kristen Constant  
Iowa State University

**First Vice Chair:** Naresh Thadhani  
Georgia Institute of Technology

**Second Vice-Chair:** David Bahr  
Purdue University

**Treasurer:** Frank Ernst  
Case Western Reserve University

**At Large Members:**

Susan Sinnott

The Pennsylvania State University

David G. Cahill

University of Illinois at Urbana  
Champaign

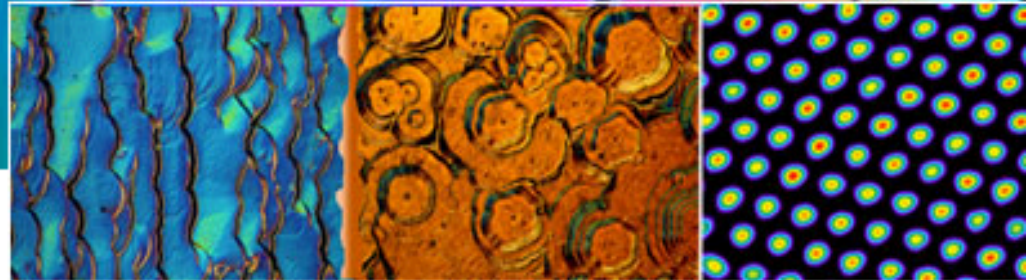
**Immediate Past Chair:** Mark Asta  
University of California, Berkeley

KC rotates to immediate Past  
Chair, we will need to fill Second  
Vice President Position and/or At  
Large Member if vacated.

# University Materials Council

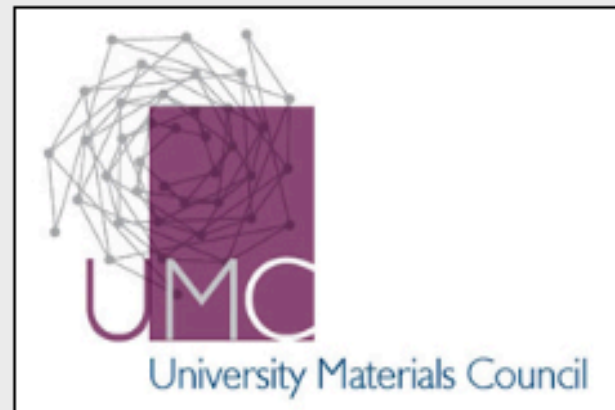
<http://www.umatcon.org>

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## Welcome to The University Materials Council Web Site

The University Materials Council (UMC) is composed of Department Heads, Chairpersons, Directors, and group leaders from academic programs in the materials field in U.S., Canadian, and Australian universities. It serves as a forum for department heads/chairs/directors of materials programs to share best practices in many areas related to materials science and engineering, including student recruitment, ABET accreditation, emerging research areas, ideas for curricular improvements, patent right policies in universities, implications of the latest materials related studies, and the health of research funding for Materials Science and Engineering as well as a variety of other issues of interest to the academic community.



### UMC's Primary Goals

UMC conducts surveys to benchmark enrollments,

## CAREERS

Job Announcements					
Date Posted	Institution	Search Area	Faculty/Search Level	Closing/Review Date	Search Flyer
3/17/17	Georgia Tech	College of Engineering	Dean	April 30, 2017 to assure optimal consideration	<a href="#">PDF</a>
3/16/17	University of Illinois at Chicago, Department of Civil and Materials Engineering	Materials Science and Engineering	Assistant/Associate/Full Professor	April 10, 2017	<a href="#">PDF</a>
3/13/17	The University of British Columbia, Department of Materials Engineering	Instructor of teaching in Materials Engineering	Instructor/Senior Instructor or Professor of Teaching	April 30, 2017	<a href="#">PDF</a>
3/13/17	The University of British Columbia, Department of Materials Engineering	Applied Electrochemistry	Assistant Professor	April 30, 2017	<a href="#">PDF</a>
3/7/17	Penn State University, University Park	Inorganic nonmetallic materials	Professor/Associate Professor	open until filled; consideration of applications will begin on March 23, 2017	<a href="#">LINK</a>
3/6/17	Rutgers University, Department of Materials Science and Engineering & Physics and Astronomy Department	Materials Science and Engineering	Tenure Track Assistant Professor	Open until filled	<a href="#">PDF</a>
2/19/17	Penn State University, University Park	College of Earth and Mineral Sciences	Professor, Dean	open until filled	<a href="#">PDF</a>
2/15/17	McGill University	Sustainable Materials Processing	Assistant or Associate Professor (tenure track)	Open until filled	<a href="#">PDF</a>
2/13/17	Monash University	Materials Science and Engineering (Education-focused position)	Senior Lecturer (or all levels)	Sunday 26 March 2017, 11:55pm Australian Eastern Daylight Time	<a href="#">PDF</a>

# AGENDA

## May 18, 2017 - Location in Keck Center

<b>8:30</b>	Introductions & Departmental Updates <sup>1</sup>	ALL
<b>9:30</b>	UMC Survey Results & Discussion	David Bahr
<b>10:15</b>	ENGINE - tool sharing of potential graduate student names -	ALL
<b>10:30</b>	Intro and discussion on Frontiers Panel	KPC and others
<b>11:00</b>	ONR Outlook report	Julie Christodoulou
<b>11:45</b>	Lunch in Keck Cafeteria	
<b>1:15</b>	NSF - Outlook	Linda Sapochak
<b>2:00</b>	ARO - Outlook	David Stepp
<b>2:45</b>	BREAK	
<b>3:00</b>	DOE Outlook	Andy Schwartz
<b>3:45</b>	Breakout Group Discussion, Frontier Panel Introduction, etc.	All - in Groups
<b>5:00</b>	Adjourn	
<b>6:30-</b>	Optional Dinner	

## May 19, 2017 - Location in Keck Center

	Breakfast ON your own	
<b>8:30</b>	Frontiers Panel Input Development	(Subgroup Prelim report)
<b>10:30</b>	Break	
<b>10:45</b>	Business Meeting Financial Report /Elections	KC
<b>12:00</b>	Adjourn	

8:30-9:30

DEPARTMENTAL UPDATES

NAME, ROLE, AFFILIATION

**ONE** MINUTE TREND CHECK

# TREND CHECK

- Just a minute to describe the TREND, OBSERVATION, CONCERN that affects MATERIALS RESEARCH at your institution.
- ONE MINUTE, *PLEASE*



# UMC SURVEY DISCUSSION

Data shared with Participating institutions. Past data to be shared with all.



# POTENTIAL GRADUATE STUDENT – SHARING DATA

- History
  - UMC Collects Names (with Students' permission) of people interested in going to graduate school and shared it with those institutions contributing names
- Challenges
  - Consistency
  - Workload
  - Opportunities for programs without undergraduate degrees in Materials



# ENGINE

## [HTTPS://ENGINE.ENG.UFL.EDU](https://engine.eng.ufl.edu)

- National consortium open to any U.S. institution offering bachelors of engineering degrees

And

- interest in recruiting outstanding students for graduate school
  
- National consortium designed to enhance the volume, academic quality and diversity of more engineering graduate students and engineering leaders within the U.S.



## INVITED INSTITUTIONS

Institutions participating are indicated in **BOLD**.

- **Arizona State University**
- **Auburn University**
- Bethune Cookman University
- **Boise State University**
- **Boston University**
- Bucknell University
- California Institute of Technology
- California Polytechnic State University - San Luis Obispo
- California State Polytechnic University - Pomona
- California State University, Los Angeles
- **Carnegie Mellon University**
- Case Western Reserve University
- City College of the City University of New York
- Clarkson University
- Texas A&M University, Kingsville
- **Texas Southern University**
- **Texas State University**
- **Texas Tech University**
- Tufts University
- Tuskegee University
- University at Albany, State University of New York
- University of Akron
- **University of Alabama**
- University of Alabama in Huntsville
- **University of Alabama, Birmingham**
- **University of Arizona**
- **University of Arkansas**
- **University at Buffalo - State University of New York**

# 2015 STUDENT PROFILE

The inaugural year of ENGINE highlights the following student profile:

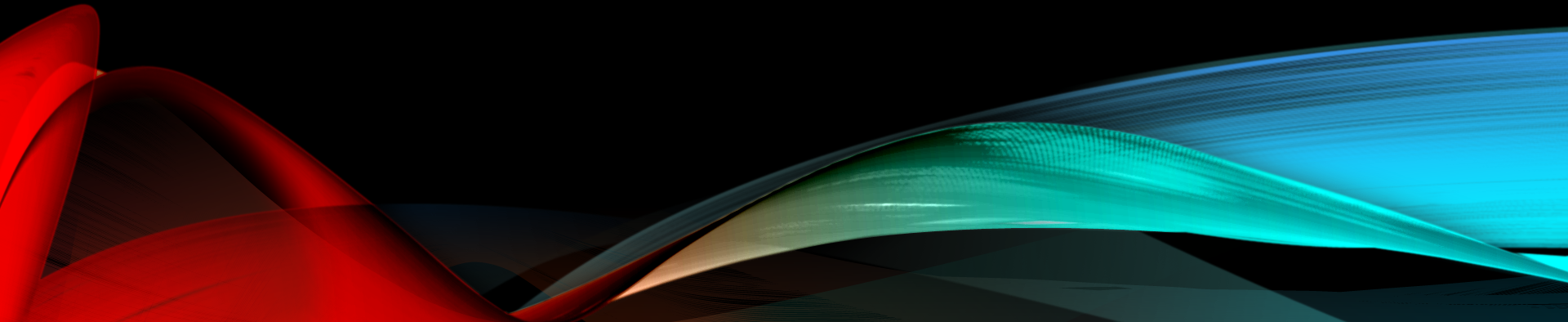
- 56 institutions
- 11,621 engineering students
- 10,079 domestic students (U.S. Citizens, Permanent Residents)
- 5,354 graduating seniors; 6,228 juniors or beyond
- 3,327 female students; 2,913 domestic
- 1,474 underrepresented minority students
- 3,819 with GPA 3.75 to 4.00
- 2,990 with GPA 3.50 to 3.74
- 2,431 with GPA 3.25 to 3.49
- 2,050 with GPA 3.00 to 3.24
- 323 with GPA < 3.00

# DISCUSSION

Are there people here with direct experience?

Pros, cons?

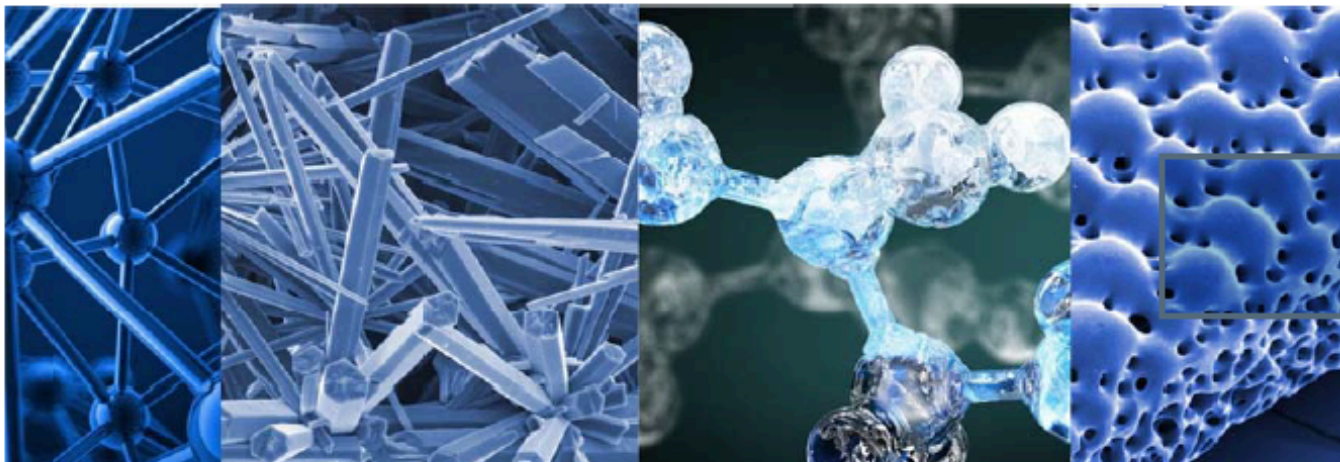
Should we move in this direction?



# FRONTIERS PANEL

*The National Academies of*  
SCIENCES • ENGINEERING • MEDICINE

## *Frontiers of Materials Research: A Decadal Survey*



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 be target an audience including the sponsors and other federal agencies that support materials research, science policymakers, and researchers in materials research and other fields.

# 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 EXAMINE

- Assess the progress **PROGRESS** movements in MR over the past decade;
- Identify the principal changes in the research and development landscape **LANDSCAPE** MR in the United States and internationally over the past decade, and how those changes have impacted MR;
- Identify MR areas that offer promising investment opportunities **Promising Areas for Investment** the period 2020-2030 or have major scientific gaps;
- Identify fields in MR that may be good candidates for transition to supporters, other disciplines, applied R&D sponsors, or industry; **What we're NOT going to do**



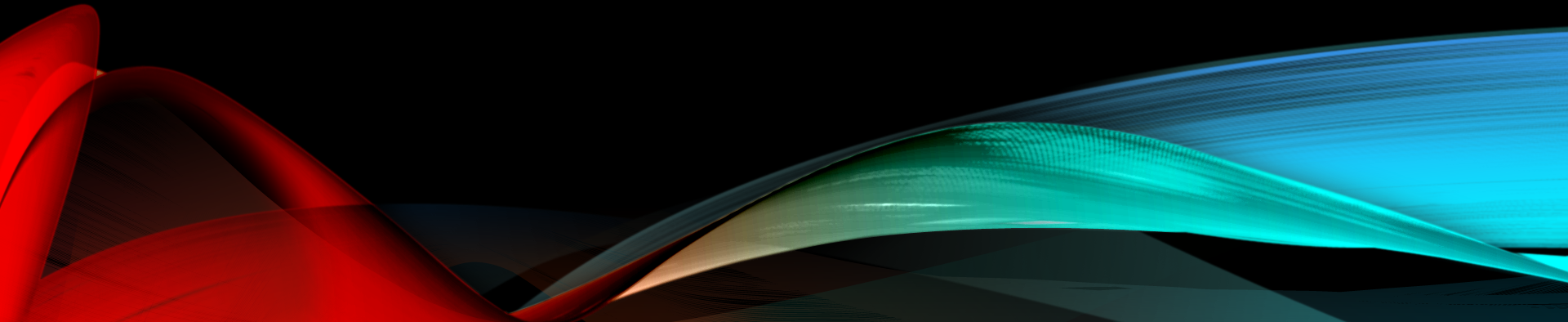
- Identify the impacts that MR has had and is expected to have on **Impacts on Emerging Technologies** national needs, and science, broadly;
- Identify challenges that MR may face over the next decade **Anticipated Challenges (and solutions)** the research community for addressing those challenges; and
- 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 **Current Trends in a Global Context** are anticipated to see significant near-term growth. Based on those trends, recommend steps the United States might take to either secure leadership or to enhance collaboration and coordination of such research support, where appropriate, for identified subfields of MR

# DISCUSSION GROUPS

- Assess Progress
- Changes in Research Landscape
- Promising Areas of Investment
- Current Trends in a Global Context (Where can the US LEAD)
- What we're NOT going to do
- Anticipated Challenges and Solutions
- Impacts on Emerging Technologies

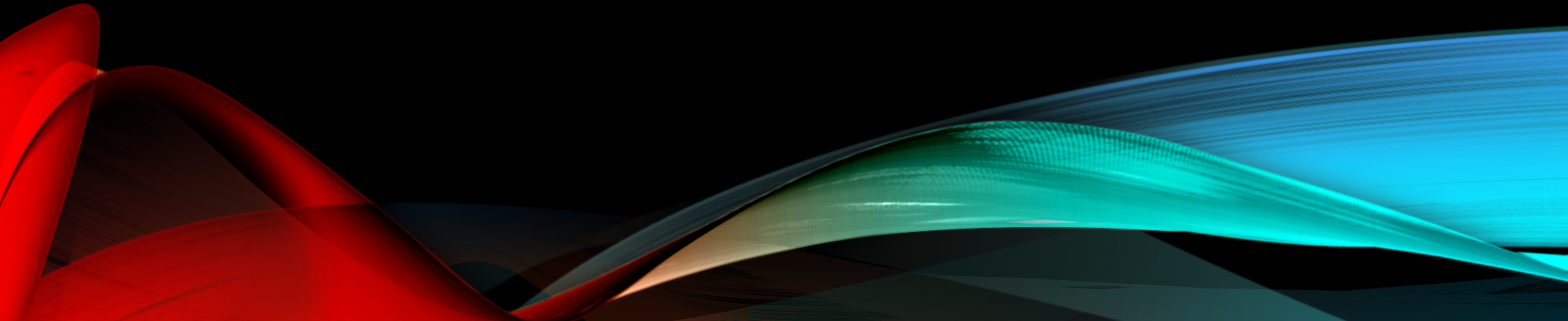
OUTLOOK PRESENTATIONS

ONR – NSF – ARO – DOE



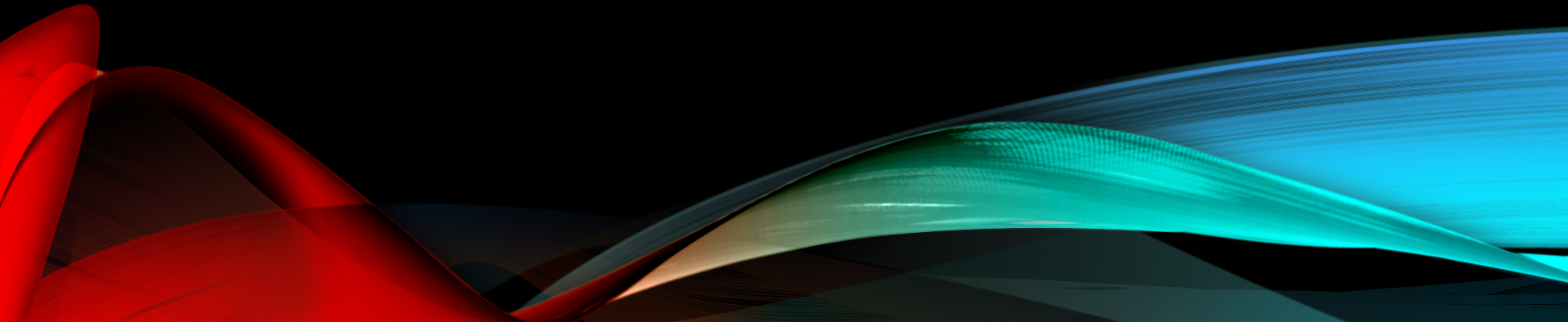
# LUNCH – CAFETERIA IN HOUSE

Agenda resumes at 1:15 -



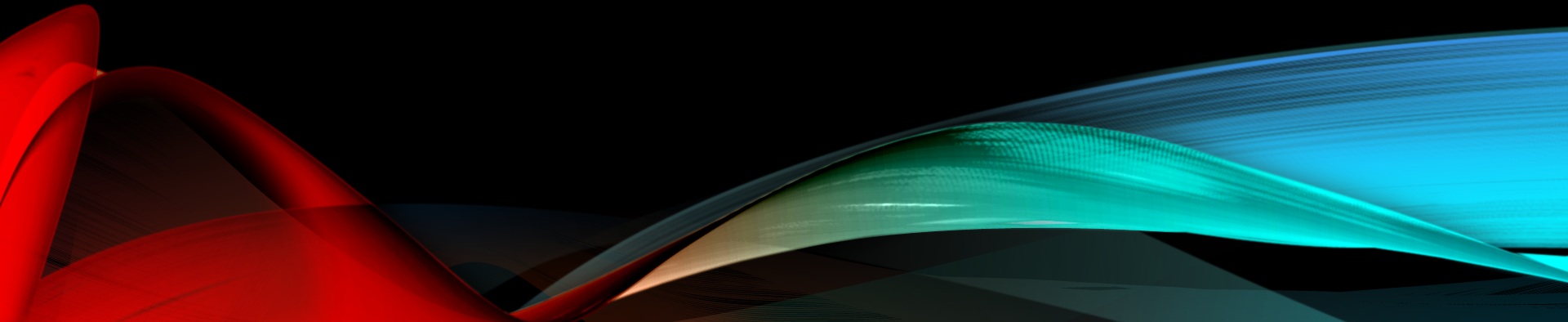
# NSF OUTLOOK

Julie Christodoulou



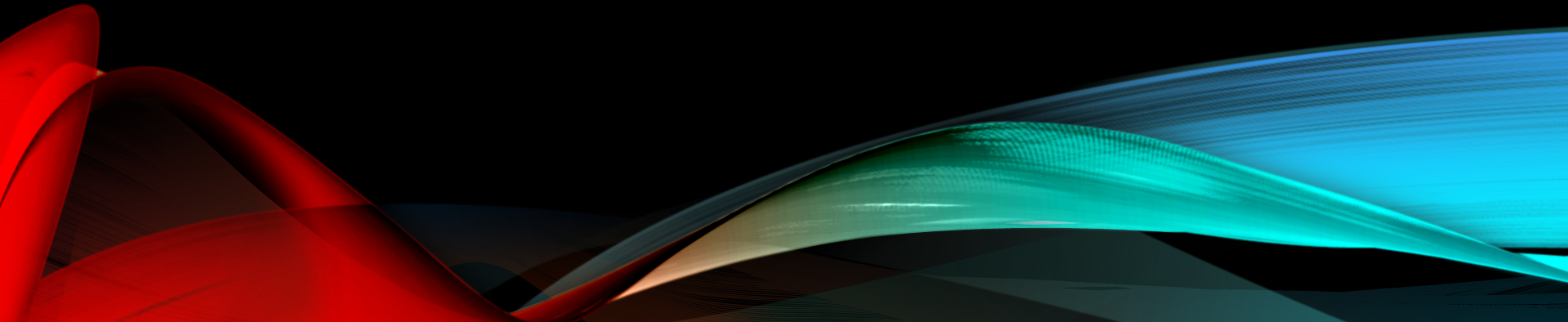
# ARO OUTLOOK

David Stepp

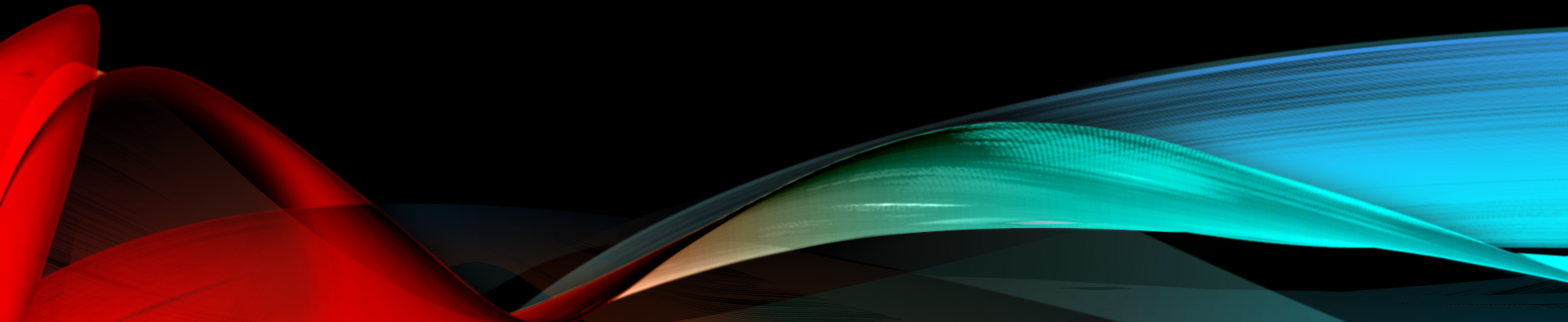


# DOE OUTLOOK

Andy Schwartz

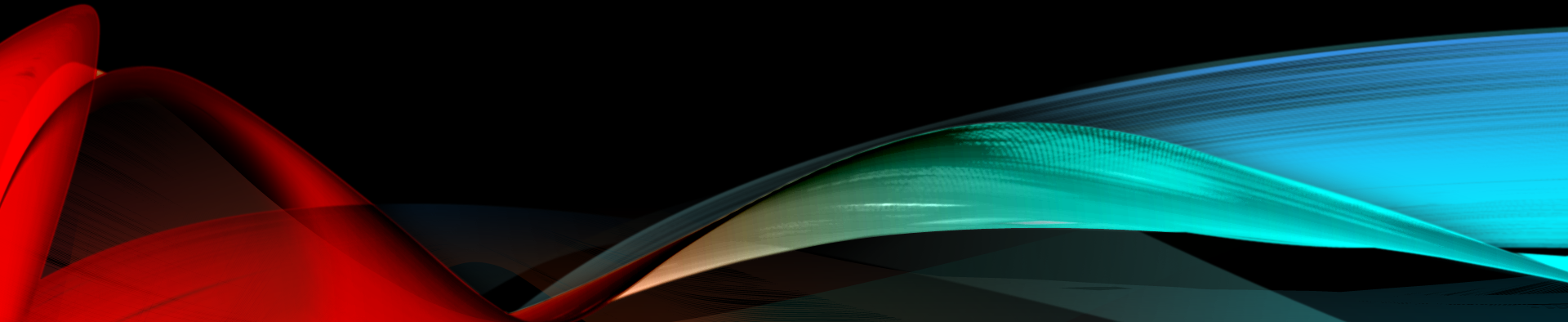


# BREAKOUT GROUP DISCUSSIONS





# INPUT FOR FRONTIERS PANEL



# TASKS:

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- Identify the impacts that MR has had and is expected to have on **Impacts on Emerging Technologies** national needs, and science, broadly;
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# DISCUSSION GROUPS

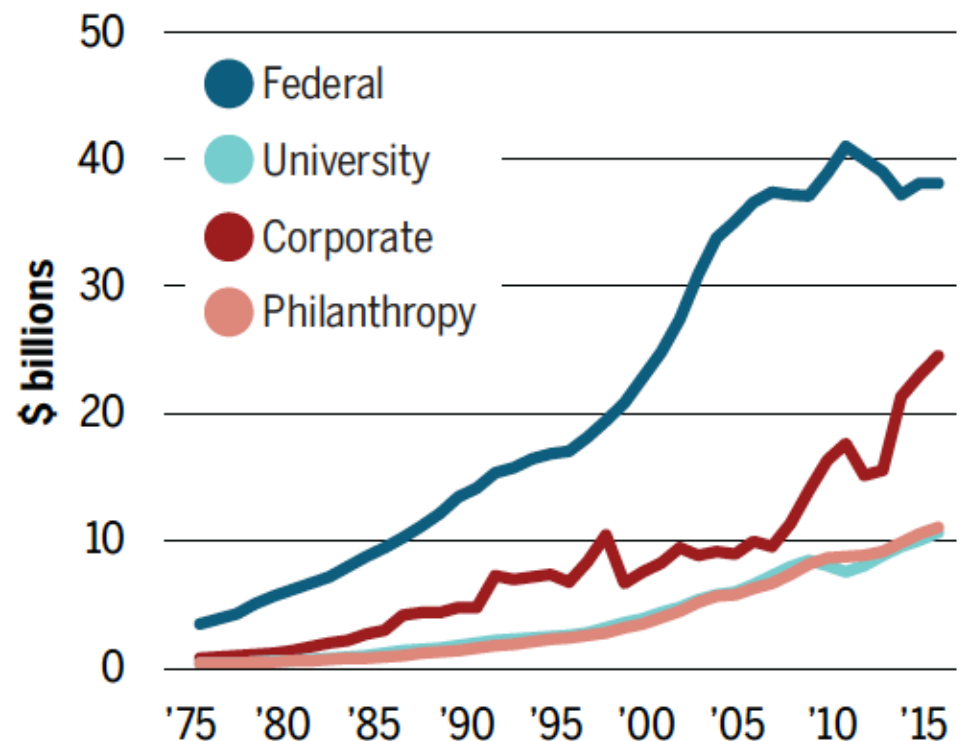
- Assess Progress
- Changes in Research Landscape
- Promising Areas of Investment
- What we're NOT going to do
- Impacts on Emerging Technologies
- Anticipated Challenges and Solutions
- Current Trends in a Global Context (Where can the US LEAD)

For the first time in the post–World War II era, the federal government no longer funds a majority of the basic research carried out in the United States. Data from ongoing surveys by the NSF show that federal agencies provided only 44% of the \$86 billion spent on basic research in 2015. The federal share, which topped 70% throughout the 1960s and '70s, stood at 61% as recently as 2004 before falling below 50% in 2013.

SCIENCE sciencemag.org  
MARCH 2017 • VOL 355  
ISSUE 6329

## A basic shift

Federal agencies provided less than half of U.S. basic science funding in 2015, a result of stagnant budgets and rising investment by industry, universities, and philanthropies.





# BUSINESS MEETING

- Financial Report
- Election
- New Business

# TREASURERS REPORT

- TREASURER – FRANK ERNST – CWRU
- MELANIE PRESTAGE - CWRU

2016 UMC BALANCE SHEET		Debits	Credits	Net Total
Beginning Balance	\$26,368.38			
Spring Meeting 2016		\$5,372.69		
Fall Meeting 2016		\$2,563.83		
Membership Fees (54)			\$11,600.00	
	\$26,368.38	\$(7,936.52)	\$11,600.00	\$30,031.86

# IDEAS FOR INVESTMENTS/COMMENTS

- Previous 'Special Workshops, events
  - Diversity Workshop
  - Others?
- DMMM3 – dates – piggy back
- Future topics
- Shared resources, shared data, etc. (Institutional models, etc.)



# UMC EXECUTIVE COMMITTEE

## 2016-17

**Chair:** Naresh Thadhani  
Georgia Institute of Technology

**First Vice Chair:** David Bahr  
Purdue University

**Second Vice-Chair:**  
**Susan Sinnott Penn State**

**Treasurer:** Frank Ernst  
Case Western Reserve University

**At Large Members:**

David G. Cahill (term ends 2018)  
University of Illinois at Urbana  
Champaign

**S. Pamir Alpay** (term ends 2019)  
University of Connecticut

**Immediate Past Chair:**

Kristen Constant  
Iowa State University

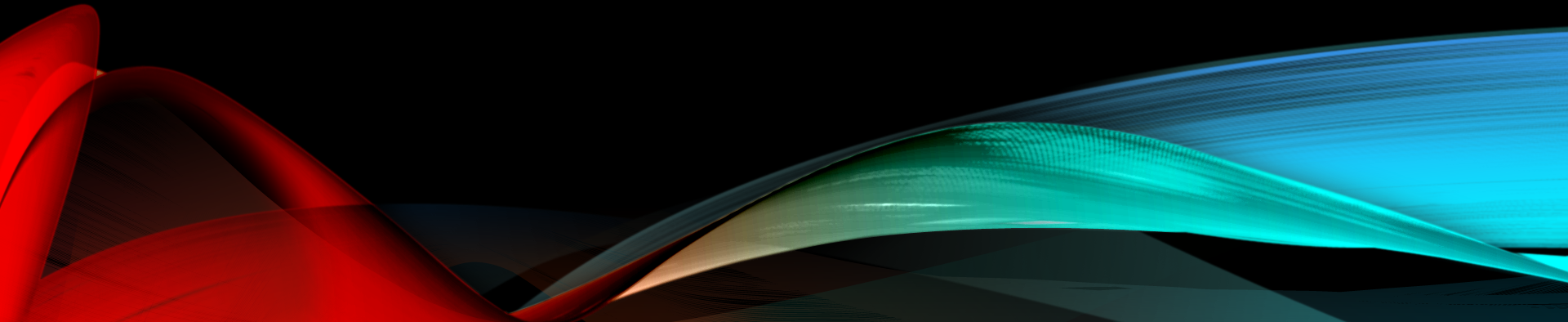


# OTHER NEW BUSINESS

- Future meeting topics
- Future meeting locations
- Special Projects

# *THANK YOU!*

THANK YOU to NAS for Allowing us to participate in the Frontiers Group Effort





HAVE A HAPPY,  
HEALTHY, PRODUCTIVE  
SUMMER