

# Materials Education SYMPOSIA 2016

## 7th North American Materials Education Symposium Report

University of California, Berkeley, March 17-18, 2016

The 7th North American Materials Education Symposium (NAMES) was the biggest to date, with 82 participants playing a full part in two days of stimulating discussion. The University of California, Berkeley, was the venue this year and themes included engaging student interest, broadening horizons, sustainability in design, and materials and design.

Feedback was overwhelmingly positive – almost everyone who completed a feedback form said they would recommend the symposium to their colleagues, and hope to attend the next one at MIT in August 2017.



*UC Berkeley campus*



*Mark Asta (UC Berkeley) opens the Symposium*

The Materials Education Symposia series: NAMES, the International Materials Education Symposium (IMES) and the Asian Materials Education Symposium – have firmly established themselves in the calendar. They are the largest gathering for the university-level materials education community to come together to discuss ideas, tools, and best practices relating to the teaching of materials in and across engineering, design, and science.

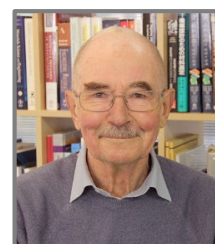
### The Symposia have three main aims:

- to share ideas, innovations, experiences, successes and failures
- to provoke productive discussion around these issues
- to expand the links that form such a key feature of the Materials Community.

This summary report aims to give you a flavor of the presentations, the discussions, and the collegiate atmosphere at this year's Symposium.

### Overview by Mike Ashby (University of Cambridge and Granta Design), Chair of Symposia Academic Advisory Committee

The 7th NAMES Symposium was both fascinating and fun. The breadth and range of the talks and the discussion was inspirational. I won't attempt to describe all the talks but rather try to convey a sense of the talks and the discussion. Here are some examples.



Sustainability in design: the opening talk of the meeting by **David Dornfeld** (UC Berkeley) set the scene for subsequent talks on introducing this difficult subject to students. His talk is now made painfully poignant by the tragic news that he is no longer with us.

Industrial design: with engaging and thought-provoking presentations by **Kara Johnson** (Author and ex IDEO), **Mette Bak-Anderson** (Copenhagen School of Design) and **Hannah Melia** (Granta Design), with in-depth exploration of “materiality” – the associations and aesthetics that materials bring to product.



*Matthew Sherburne, Mike Ashby and David Dornfeld*



*Jen Dionne (Stanford)*

At the other analytical extreme, there was a series of presentations on the challenges of introducing students to the emerging fields of Integrated Computational Materials Engineering (ICME), the Materials Genome Initiative (MGI) and Computational Materials Science (CMS), with perceptive talks from **Patrice Turchi** (LLNL and 2015 President of TMS), **Tanya Faltens** (NanoHub, Purdue) and **Lan Li** (Boise State).

A recurring theme of recent Symposia has been the ways in which e-learning and new educational techniques (“flipped classroom”, “bottom-up teaching”, “activity-based learning”) are re-shaping the way we teach, with increasing recognition of the inadequacies

of the traditional “lecture and listen” mode of transmitting knowledge. **James Shackelford** (UC Davis) set the scene with his most recent experience with both traditional text-book and e-learning approaches.

**Ron Kander** (Philadelphia) introduced his “improvisational” approach – one in which the course evolves in real time following the interests and abilities of the students (great, but it takes some nerve!). **Chris Hutchinson** (Monash), **Christoph Gehlen** (TU München) and **Luke Lee** (University of the Pacific) described their experiences with a more multi-disciplinary approach utilizing e-learning and YouTube where appropriate.

The session closed with more philosophical reflections from **John Nychka** (Alberta) and **Glenn Hibbard** (Toronto) focusing on structure (nanostructure, microstructure, engineering structure) as a central tool for materials innovation.

To add the ultimate, light-year dimension, **Sylvia Johnson** (NASA, Ames) treated us to an eye-opening and fascinating analysis of materials for space exploration.



*Steve Yalisove (Michigan)*



**Sunniva Collins** (CWRU and 2015 President of ASM International)

I have only touched here on some of the highlights of the Symposium. I am personally grateful to all those who joined me on the Academic Advisory Committee, helping to put together the strong program from the many excellent submissions. I would also like to thank the following for their help and continuing support: ASM International; American Society for Engineering Education (ASEE), Materials Division; International Federation of Engineering Education Societies (IFEES); The Minerals, Metals & Materials Society (TMS); and The University Materials Council (UMC).



**Sylvia Johnson** (NASA Ames)



**Glenn Hibbard** (Toronto) and **John Nychka** (Alberta)

I would like to end with my sincere thanks to Matthew Sherburne, Mark Asta, Peter Hosemann and the Materials Department at Berkeley who were gracious hosts and did so much to make this excellent Symposium run so smoothly.

If you would like to find out more you will find the full abstracts and the talks themselves on the Symposium Archive website accessible through [www.materials-education.com](http://www.materials-education.com)

**Mike Ashby**

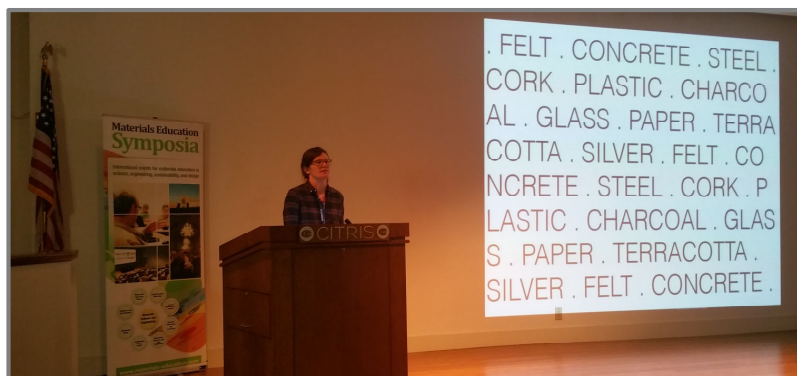


*Symposium photograph at the end of day two*



## Feedback from other participants

**Mark Asta** (Chair, Department of Materials Science and Engineering, UC Berkeley): “The North American Materials Education Symposium (NAMES) was held at a particularly opportune time for us at Berkeley. As is the case with most North American materials programs, interest and enrollment in our academic programs has been growing steadily in recent years. This growth comes at a time when we are experiencing a turnover of our faculty – roughly a third of the active faculty in materials science at Berkeley were hired in the last five years.



*Kara Johnson (Author and Designer)*

These factors, and recent campus investments in experiential and design education, have led to a renewed focus on our curriculum. The NAMES conference provided an outstanding opportunity to learn from experts and innovators in the field. I found particularly inspiring the talks that highlighted the use of new

technologies and educational methods, and the integration of traditional materials curriculum with topics surrounding sustainability and design.

The NAMES workshop is a truly outstanding forum for exchange of ideas and experiences, which will doubtless benefit our community for years to come.”

**William Callister** (Utah): “This is my fifth NAMES, and I would venture to say the best! The presentations and posters were timely, enlightening, and provocative. Attendance at these Symposia is a must for all serious materials educators. It is always a delight to interact with and gain new perspectives from colleagues—both former and new ones.”

**James Shackelford** (UC Davis): “The 7th NAMES continued its role as the premier gathering of materials educators in North America. What a pleasure to share ideas and best practices within a context that is both collegial and rigorous. As usual, I came away invigorated and supplied with a range of creative approaches to materials education.”



*Peter Hosemann (UC Berkeley) and Patrice Turchi (LLNL and 2015 President of TMS)*



*Mike Ashby receives a surprise Symposium T-shirt from Matthew Sherburne*

**Sunniva Collins** (CWRU and 2015 President of ASM International): “The symposium was a thoroughly enjoyable experience. It was refreshing to meet educators from around the world and focus on the “how” of teaching materials. I learned much in two days that I can apply immediately to improve my teaching. I hope to make this conference an annual event on my calendar.”

## Courses, posters, networking and social program

The main Symposium program was preceded by a CES EduPack course (led by **Mike Ashby** and **Hannah Melia**) at the Berkeley City Club. Around 20 of the Symposium participants picked up useful hints and tips and explored how CES EduPack can be used to enhance materials teaching across engineering and design courses.



*Hannah Melia (Granta Design)*

Twenty-two poster presenters had 60 seconds each to make their pitch during the 'poster teaser' slot on the Symposium's first morning and this provoked some lively discussion and networking over both days.

The Social Program offered the opportunity to meet existing friends and make new ones. The Presenters' Dinner at the Berkeley City Club and Symposium

Dinner held in the Hearst Memorial Mining Building brought together the growing Symposium community. At the Symposium Dinner, **James Shackelford** (UC Davis) was presented with the inaugural Symposium Award for his "Contributions to Materials Education" by **Matthew Sherburne** (UC Berkeley).



*Alison Polasik (The Ohio State) introduces her poster during the poster teaser session*



*The Poster session on day one*



*Lunch at the Jacobs Institute for Design Innovation*



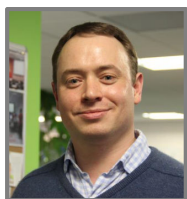
*Symposium Dinner at the Hearst Memorial Mining Building*



*James Shackelford receives the 1<sup>st</sup> Symposium Award*



**Final words by Marc Fry (Granta Design),**  
Secretary of Symposia Academic Advisory Committee



I would like to thank all 82 participants and Granta colleagues for making this event a great success, with two days of thought-provoking discussions and fun. We greatly value the ongoing input and suggestions from the Symposium community which helps identify new directions and develop the Symposium further. We now look forward to continuing to work with the Symposium Academic Advisory Committee and local hosts towards future Symposia.

I'm delighted to confirm the following dates, locations and themes for upcoming events:

- **2<sup>nd</sup> Asian Materials Education Symposium (AMES)**  
December 8-9, 2016, National University of Singapore  
[Theme: Materials and Sustainable Development Education](#)  
***Talk abstract deadline: May 31, 2016***
- **9<sup>th</sup> International Materials Education Symposium (IMES)**  
April 6-7, 2017, University of Cambridge, UK  
[Theme: Education and Industry](#)  
***Talk abstract deadline: September 30, 2016***
- **8<sup>th</sup> North American Materials Education Symposium (NAMES)**  
August 24-25, 2017, Massachusetts Institute of Technology, USA  
[Theme: Materials Education Innovation. Sub-themes: Engaging students; Online Education; and the "Maker" Movement](#)  
***Talk abstract deadline: January 31, 2017***



I would like to invite you all to submit an abstract for these events and I look forward to continuing the conversation. For further details, please visit [www.materials-education.com](http://www.materials-education.com) You are also very welcome to contact members of the Granta Education Team if you have any questions or require further information.

With best wishes,

**Marc Fry**

**Director, Education Division, Granta Design**