



**2018/2019 Division & Class Report
to the
ACerS Board of Directors**

Division/Class: Electronics Division

Current Division/Class Officers: (complete as appropriate for your Division or Class)

Chair: **Rick Ubic**
Chair-Elect: **Jon Ihlefeld**
Vice-chair: **Alp Sehrioglu**
Secretary: **Hui (Claire) Xiong**
Secretary-Elect: **Jenny Andrew**
Trustee: **Steven Tidrow**

Incoming Division Officers: (complete as appropriate for your Division or Class)

Note: most Divisions change officers at the ACerS Annual Meeting in October (MS&T). If your Division changes officers at another time, please indicate when incoming officers will begin their terms: _____

Chair: **Jon Ihlefeld**
Chair-Elect: **Alp Sehrioglu**
Vice-chair: **Hui (Claire) Xiong**
Secretary: **Jenny Andrew**
Secretary-Elect: **Ed Gorzkowski**
Trustee: **Steven Tidrow**

Summary of Meetings and Activities Held/To Be Held (from Oct. 2018 through Oct. 2019):

- 1) EDiv Executive Committee Meeting, Columbus, OH, 14 October 2018
- 2) EDiv General Business Meeting, Columbus, OH, 15 October 2018
- 3) EDiv Executive Committee Meeting, Orlando, FL, 23 January 2019
- 4) EDiv Executive Committee Meeting, Portland, OR, 29 September 2019
- 5) EDiv General Business Meeting, Portland, OR, 30 September 2019

Future Planned Meetings/Activities (from Nov. 2019 – Oct. 2020):

- 1) EDiv Executive Committee Meeting, Orlando, FL, 22 January 2020
- 2) EDiv Executive Committee Meeting, Pittsburgh, PA, 4 October 2020
- 3) EDiv General Business Meeting, Pittsburgh, PA, 5 October 2020

New Initiatives/Opportunities:

Early next year a “Communities” link will be added to the EDiv web pages and function like a message board. In addition, EDiv will now have an Instagram account to attract those that might not go to the website. There EDiv members would be able to post announcements, pictures, and videos to try to

engage students and YPs. It could also have considerable outreach potential. A short-term goal would be to have attendees of EMA2020 post to it during the conference (e.g., #EMA2020Orlando), thus providing a real-time platform for sharing thoughts during the conference. We could post conference pictures there, award ceremony shots, short video clips of posters, vendor pictures/videos, maybe even a photo booth.

Action Items for ACerS Board Consideration at September 28, 2019 meeting:

N/A

Issues/Concerns:

Membership

Current membership is 784, which is 3% down from last year (810) despite the Division's continued focus on increasing student and young professional engagement in Division activities in terms of both direct support and volunteer opportunities. We also continue struggling to increase industrial involvement. Towards that end a joint webinar series (with MRS) featuring industrially relevant topics was briefly discussed, but the EDiv champion for this effort has now taken on other responsibilities and cannot carry the idea forward. A new champion will be sought at the next EDiv general business meeting at MS&T. It was also noticed anecdotally that many of our members renew their membership by attending EMA every year, but if they miss the meeting one year their membership lapses despite targeted emails to all attendees from EDiv officers. Furthermore, many people who should be associated with EDiv based on their research/business activities are associated with BSD and/or ECD (possibly from attending ICACC?) instead. Examples who are being elevated to Fellow this year include Takaaki Tsurumi, Charles Lewinsohn, Xingbo Liu, and Sossina Haile. There are currently just 85 people with BSD primary and EDiv secondary affiliations (whereas there are 234 people with EDiv primary and BSD secondary affiliations). This imbalance may be inevitable, as BSD is much more general in its scope and so is able to recruit more broadly (in the same way that *Time* has a larger readership than *Potato Review Magazine*).

Awards

A problem observed by the EDiv Committee on Awards/Scholarships was that members of our community who may be legendary within EDiv (or at least within the Ferroelectrics world) aren't necessarily known to the rest of ACerS, which makes things like Society-wide offices and awards more difficult. The obvious - although challenging - solution would of course be to get more EDiv members involved in ACerS activities outside of just EMA and EDiv.

EMA

There were several student talks scheduled on Friday, which meant that they could not be considered for the student award competition. Perhaps in future symposium organizers should be asked to avoid scheduling student talks on Friday.

Additional Items of Note:

Awards

Long-time EDiv member Winnie Wong-Ng was elevated to Distinguished Life Member status this year. In addition, three EDiv members were elevated to Fellow status, including Yoon-Bong Hahn, Shujun Zhang, and Jinyang Wang. The Committee on Awards/Scholarships investigated possible candidates for future Fellow nominations and from a shortlist of 27 names prioritized three for this year and one for next year. All three of this year's nominations have been submitted.

The 2019 Lewis C. Hoffman scholarship will be awarded to Connor Chadbourne, Missouri University of Science and Technology (Missouri S&T) at the EDiv General Business meeting at MS&T.

The winners of the 2018 Edward C. Henry best paper award are Yanhao Dong and I-Wei Chen, University of Pennsylvania, for their paper entitled "*Electrical and hydrogen reduction enhances kinetics in doped zirconia and ceria: II. Mapping electrode polarization and vacancy condensation in YSZ*" published in the Journal of the American Ceramic Society 101 [3] 1058-1073 (2018). Yanhao Dong was a PhD student at the time this work was conducted and is now a postdoc at MIT. Unfortunately neither author can join us at MS&T to receive the award in person.

MS&T Symposia

There were four symposia at MS&T 2018 with EDiv organizers, but for 2019 we are down to just one:

Advances in Dielectric Materials and Electronic Devices, organized by Amar Bhalla, UTSA; Ruyan Guo, UTSA; Rick Ubic, Boise State University; and Danilo Suvorov, Jožef Stefan Institute

The Division will fund the attendance of two student presenters in this symposium. Emails were sent to all nine eligible students on 17 July 2019 and three subsequently applied. The two winning candidates were chosen by the EDiv Committee on Awards/Scholarships, and they are:

Evan Smith, Boise State University
Yi Yuan, Simon Fraser University

Fortunately, in 2020 we will be the sole divisional sponsor of three symposia and co-sponsor of six more:

- 1) *Advances in Dielectric Materials and Electronic Devices*, EDiv, organized by Amar Bhalla, UTSA; Ruyan Guo, UTSA; Rick Ubic, Boise State University; and Danilo Suvorov, Jožef Stefan Institute
- 2) *Machine Learning for Discovery of Structure-Process-Property Relations in Electronic Materials*, EDiv, organized by B. Reeja Jayan, CMU
- 3) *Advanced Materials for Harsh Environments*, EDiv, organized by Navin Manjoran, Solve
- 4) *Phase Transformations in Ceramics: Science and Applications*, EDiv & BSD, organized by Trudy Kriven, UIUC
- 5) *Functional Defects in Electroceramic Materials*, EDiv & BSD, organized by Claire Xiong, BSU
- 6) *Materials Informatics for Images and Multi-Dimensional Datasets*, EDiv & BSD, organized by Amanda Krause, UF
- 7) *Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials*, EDiv & BSD, organized by Haitou Zhang, UNCC

- 8) *Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry*, EDiv & TMS, organized by Gary Pickrell, Virginia Tech
- 9) *Synthesis, Characterization, Modeling and Applications of Functional Porous Materials*, EDiv & ECD, organized by Lan Li, BSU

At the request of the program organizers, symposia 2 and 6 above are currently undergoing modifications, as there were several data-enabled topics and the organizers want to avoid overlap as much as possible.

EMA

EMA 2019 was the 10th anniversary of the meeting. The chairs were Jon Ihlefeld (EDiv), Alp Sehrioglu (EDiv), Jeff Rickman (BSD), and John Blendell (BSD). There were 13 symposia, largely along similar topics as previous years. Plenary speakers included Jon-Paul Maria from Penn State and Yet-Ming Chiang from MIT. More than 300 abstracts were received/accepted, but the US government shut down had an adverse effect on attendance. Sponsorship was received from Radiant (\$4k), 3M (\$1k), and the Center for Integrated Nanotechnologies (CINT) (\$2k). As always, the meeting featured a number of student-centric activities aimed to promote education and student involvement in EDiv. These activities included two lunchtime sessions, a poster session in which students presented work in an unintimidating environment, and a student oral presentation competition that was judged throughout the week. Prizes for the top three posters and student presentations were awarded at the conference banquet. The lunch sessions included an overview of topics at EMA (a student guide to the meeting) and one about different career paths which was presented by three TPs (Elizabeth Paisley, Sandia National Labs; Michelle Dolgos, University of Calgary; and Ling Cai, Corning Corporation). The goal of the later event was to give students an idea of what the day-to-day life of working in a government lab, academia, or industry involves and discuss the pros and cons of each. The involvement of students in the EMA conference continues to nurture an environment of learning and a constructive atmosphere where students can thrive in a professional academic setting. Two tutorials were also organized, one entitled "*Impedance Spectroscopy: Opportunities and its Application in Materials*" given by Rosario Gerhardt of Georgia Tech and Daniel Lewis of Rensselaer Polytechnic Institute; the other was the recurring and ever popular "*Failure - the Greatest Teacher*", this year given by Andrew Bell (University of Leeds) and Susan Trolier-McKinstry (Penn State).

For 2020 there will be 16 symposia, three of which are new; however, in future the symposia on ion-conducting ceramics and point defects/transport in ceramics can probably be combined. Part of the *Molecular, Inorganic, and Hybrid Ferroelectrics for Optoelectronic and Electronic Applications* symposium was a successful session in the *Characterization of Structure-Property Relationships in Functional Ceramics* symposium last year. This year it was combined with a new symposium on optoelectronic materials and turned into its own symposium. Fortunately, both groups that proposed the symposia worked very well together.

Financial Statement: (Including year-end summary of expenditures from the Division's Funds)
Attached

Submitted By: Rick Ubic on behalf of EDiv