

## CENTER FOR DIELECTRICS AND PIEZOELECTRICS

### Spring 2024 Meeting NC State Plant Sciences Building 840 Oval Drive, Raleigh, NC May 22-24, 2024

#### AGENDA

#### Wednesday, May 22, 2024:

7:30 – 8:15 AM	Travel from StateView Hotel to Plant Sciences Building <i>Meet in lobby of StateView Hotel (A van with 16 passenger capacity will be driving back and forth every 10 min until 8:15 am)</i>	Van * Walking is an option! <a href="#">Directions &amp; Map</a>
8:00 AM – 5:00 PM	Registration (Lobby)	
8:00 – 9:00 AM	Breakfast (Lobby)	
<b>9:00 AM – MEETING BEGINS (First Floor Seminar Room)</b>		
9:00 – 9:30 AM	Welcome and Introductions	Greg Parsons/ Susan Trolier-McKinstry
<b>9:30 AM – 12:30 PM</b>		
<b><u>SESSION I</u></b>		
9:30 – 9:50	I-1 Determining Relationship between Burn-in Conditions and Wear-out in BME X7R MLCCs <b>CDP_2022_3</b> (Randall)	Pedram Yousefian (Penn State)
9:50 – 9:55	<b>Q&amp;A for I-1</b>	
9:55 – 10:15	I-2 Acoustic Characterization of Damage in Multilayer Ceramic Capacitors <b>CDP_2022_4</b> (Arguelles/Trolier-McKinstry)	Haley Jones (Penn State)
10:15 – 10:20	<b>Q&amp;A for I-2</b>	
10:20 – 10:40	I-3 Flexible Lead-Free Antiferroelectric Capacitor for Energy Storage <b>CDP_2023_7</b> (R. Xu)	Reza Shokralikandi (NC State)
10:40 – 10:45	<b>Q&amp;A for I-3</b>	
10:45 – 11:15	<i>Break (Lobby)</i>	
11:15 – 11:35	I-4 Investigation of MLCC Reliability and the All-xScxN Device Quality Factor Using Optical Thermography <b>CDP_2023_5</b> (Choi/Trolier-McKinstry)	Kyuhwe Kang (Penn State)
11:35 – 11:40	<b>Q&amp;A for I-4</b>	
11:40 – 12:00	I-5 Complex Dielectrics by Atomic Layer Deposition <b>CDP_2022_10</b> (Parsons/Jones)	Nick Carroll (NC State)
12:00 – 12:05	<b>Q&amp;A for I-5</b>	

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12:05 – 12:25	I-6	Designing Highly Reliable Dielectrics with Cold Sintering <b>CDP_2022_2</b> (Randall)	Jake DeChiara (Penn State)
12:25 – 12:30		<b>Q&amp;A for I-6</b>	
12:30 – 1:30		<i>Lunch (Lobby)</i>	
<b>1:30 – 4:30 PM</b>		<b><u>SESSION II</u></b>	
1:30 – 1:50	II-1	Advancing Solid State Reaction Science through In-Situ Diffraction and Processing Control <b>CDP_2022_5</b> (Jones/Forrester)	Jacob Jones (NC State)
1:50 – 1:55		<b>Q&amp;A for II-1</b>	
1:55 – 2:15	II-2	Designing Novel Dielectric Composites with High Thermal Conductivity <b>CDP_2023_4</b> (Randall/Foley)	Javier Mena Garcia (Penn State)
2:15 – 2:20		<b>Q&amp;A for II-2</b>	
2:20 – 2:40	II-3	Polymer Composites <b>CDP_2022_7</b> (Lanagan)	MD Mashfiqur Rahman (Penn State)
2:40 – 2:45		<b>Q&amp;A for II-3</b>	
2:45 – 3:15		<i>Break (Lobby)</i>	
3:15 – 3:35	II-4	Beyond 5G – Electromagnetic Property Characterization at THz Frequencies <b>CDP_2022_6</b> (Lanagan)	Rocio Rodriguez (Penn State)
3:35 – 3:40		<b>Q&amp;A for II-4</b>	
3:40 – 4:00	II-5	Electromagnetic Interference (EMI) Absorbers <b>CDP_2023_10</b> (C.Xu/Adams)	Cheryl Xu (NC State)
4:00 – 4:05		<b>Q&amp;A for II-5</b>	
4:05 – 4:25	II-6	Ferroelectric and Piezoelectric Opportunities <b>CDP_2023_9</b> (Maria)	Jackson Spurling (Penn State)
4:25 – 4:30		<b>Q&amp;A for II-6</b>	
4:30 – 5:00		Travel from Plant Sciences Building to StateView Hotel (A van with 16 passenger capacity will be driving back and forth every 10 min until 5:00 pm)	Van
5:00 – 7:00		<b>Poster Session/Reception</b> (StateView Hotel)	
7:00 – 9:00		<b>Dinner</b> (StateView Hotel)	

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**Thursday, May 23, 2024:**

7:30 – 8:00 AM	Travel from StateView Hotel to Plant Sciences Building <i>Meet in lobby of StateView Hotel</i>	<i>Van</i> <i>* Walking is an option!</i>
8:00 AM-5:00 PM	Registration ( <i>Lobby</i> )	
8:00 – 8:30 AM	Breakfast ( <i>Lobby</i> )	
8:30 – 9:00 AM	<b>Student/Industry Member Session</b> <i>Introduction to Japan and its Culture (Seminar Room)</i>	<i>Daisuke Hama</i> <i>(Mitsubishi)</i>
<b>9:00 – 11:50 AM</b>	<b><u>SESSION III (First Floor Seminar Room)</u></b>	
9:00 – 9:05	Welcome	<i>Greg Parsons</i>
9:05 – 9:25	III-1 Effective Moisture Protection for Bulk and Thin Film Piezoelectric Actuators <b>CDP_2023_1</b> ( <i>Trolier-McKinstry</i> )	<i>Anthony Diaz-Huemme</i> <i>(Penn State)</i>
9:25 – 9:30	<b>Q&amp;A for III-1</b>	
9:30 – 9:50	III-2 piezoMEMS Arrays on Metal Foils <b>CDP_2023_2</b> ( <i>Trolier-McKinstry</i> )	<i>Kae Nakamura</i> <i>(Penn State)</i>
9:50 – 9:55	<b>Q&amp;A for III-2</b>	
9:55 – 10:15	III-3 Effects of Grain Neighborhood on Local Piezoelectric Response and Stress Concentration in Bulk Polycrystals <b>CDP_2023_6</b> ( <i>Pagan/Trolier-McKinstry</i> )	<i>Reilly Knox</i> <i>(Penn State)</i>
10:15 – 10:20	<b>Q&amp;A for III-3</b>	
10:20 – 11:00	<i>Break (Lobby)</i>	
11:00 – 11:20	III-4 Electromechanical Reliability in PiezoMEMS <b>CDP_2023_1</b> ( <i>Akkopru-Akgun/Trolier-McKinstry</i> )	<i>Betul Akkopru-Akgun</i> <i>(Penn State)</i>
11:20 – 11:25	<b>Q&amp;A for III-4</b>	
11:25 – 11:45	III-5 Through Thickness Variations of Degradation Phenomena in Piezoelectric and Ferroelectric Ceramics <b>CDP_2023_8</b> ( <i>Balke/Jones</i> )	<i>Huimin Qiao</i> <i>(NC State)</i>
11:45 – 11:50	<b>Q&amp;A for III-5</b>	
11:50 – 1:00 PM	Lunch ( <i>Lobby</i> )	<i>First Floor Lobby</i>
1:00 PM	<b><i>CLOSE OF TECHNICAL MEETING</i></b> -----	

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1:00 - 1:20 PM	Travel back to StateView Hotel (IAB Meeting participants remain at Plant Sciences Building)	Van
	<b>Industrial Advisory Board Meeting</b> (Industry Members and CDP Faculty Only)	
1:00 – 3:30 PM	Closed IAB meeting, <i>Plant Sciences Building</i>	<i>4<sup>th</sup> floor boardroom</i>
3:30 - 3:45 PM	Travel back to StateView Hotel	Van
Evening	Dinner on your own	

**Friday, May 24, 2024:**

7:30 – 8:00 AM	Travel from StateView Hotel to Plant Sciences Building <i>Meet in lobby of StateView Hotel</i>	Van <i>* Walking is an option!</i>
8:00 – 8:40 AM	Breakfast ( <i>Lobby</i> )	
8:40 AM – 12:30 PM	<b>Lab Tours and Tutorials</b>	<i>First Floor Seminar Room</i>
8:40 - 8:50 AM	Guidelines ( <i>Seminar Room</i> )	<i>Greg Parsons</i>
8:50 –9:00 AM	Walk to EB3	
9:00 - 9:30 AM	EB 3 – Room 1006 - Cheryl Xu “An Ultra-Thin Electromagnetic (EM) Absorber for 5G mmWave (10 - 40 GHz)	
9:30 - 9:45 AM	Walk to EB1	
9:45 - 10:15 AM	EB1- Room 1035 – Nina Balke - "Piezoresponse force microscopy to study nanoscale domains in ferroelectrics"	
10:15 - 10:45 AM	EB 1 – Room 2056 - Greg Parsons - ALD Metal Oxides	
10:45 - 11:15 AM	EB 1 - Room 2052 – Michael Dickey - “Oxide printing at room temperature”	
11:15 - 11:30 AM	Walk to PSB	
11:30 AM - 12:15 PM	PSB – Room 3105- Jacob Jones - “Demonstration of carbonate, oxides, and minerals recovering phosphorus from aquatic systems”	
12:15 - 12:30 PM	Travel back to StateView Hotel	Van <i>* Walking is an option!</i>

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