6th Graduate Research And Discovery Symposium

April 4-5, 2018

Brought to you by

GRADUATE STUDENT GOVERNMENT
COLORADO SCHOOL OF MINES

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## Schedule of Events

### Wednesday April 4th, 2018

**CoorsTek Center for Applied Sciences and Engineering**

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<tr>
<th>Time</th>
<th>Ballroom AB</th>
<th>Ballroom C</th>
<th>Ballroom D</th>
<th>Ballroom E</th>
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<tbody>
<tr>
<td>13:00-14:00</td>
<td>Educational Workshop 1</td>
<td>Rm 130</td>
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<tr>
<td>15:00-16:00</td>
<td>Educational Workshop 2</td>
<td>Rm 140</td>
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<tr>
<td>17:00-18:00</td>
<td>Happy Hour &amp; Snacks</td>
<td>Foyer</td>
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<tr>
<td>18:00-19:00</td>
<td>Keynote Speaker</td>
<td>Rm 130</td>
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<tr>
<td>19:00-21:00</td>
<td>Happy Hour &amp; Snacks</td>
<td>Foyer</td>
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### Thursday April 5th, 2018

**Ben Parker Student Center**

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<thead>
<tr>
<th>Time</th>
<th>Ballroom AB</th>
<th>Ballroom C</th>
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<tbody>
<tr>
<td>09:00-10:30</td>
<td>Poster Session: CECS I &amp; II</td>
<td>Geophysics</td>
<td>Energy &amp; Electrochemistry</td>
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<tr>
<td>10:30-10:40</td>
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<td>Coffee Break</td>
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<tr>
<td>10:40-12:10</td>
<td></td>
<td>Geology &amp; Mining</td>
<td>Math &amp; Modeling</td>
<td>Biotechnology &amp; Catalysis</td>
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<tr>
<td>12:10-13:20</td>
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<tr>
<td>13:20-14:50</td>
<td>Poster Session: CASE &amp; CERCE</td>
<td>Ground &amp; Water</td>
<td>Mechanical</td>
<td>Colloids &amp; Materials</td>
</tr>
<tr>
<td>14:50-15:00</td>
<td></td>
<td></td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>15:00-16:30</td>
<td></td>
<td>Energy &amp; More</td>
<td>MME, PE, &amp; EE</td>
<td>Physics</td>
</tr>
<tr>
<td>16:45-17:30</td>
<td>Three-Minute Thesis Finals</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>17:30-18:30</td>
<td>Awards</td>
<td>- -</td>
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</table>

It is my great pleasure to welcome you to this year’s edition of the Graduate Research and Discovery Symposium (GRADS). The Graduate Student Government has been organizing an annual event that celebrates the accomplishments of our graduate students for well over twenty years. The first such event in which I participated was probably in about the year 2000. I remember it well. The sum total of the event consisted of a handful of oral presentations observed that were scored by a handful of judges - I was one of the judges. Total participation, including participants, judges, and observers, couldn’t have been more than twenty. Since that time, due in no small part to the tireless efforts of our Graduate Student Government, this event has grown in stature, participation, and consequently value to both our institution and our students. We now routinely have over 125 participants who present their exciting research findings and engage with the broader campus community during a multi-day event. You should all be proud to be a part of this growing and evolving legacy that attests to the creativity, activism, and foresightedness of our graduate students.

Enjoy, and thank your being a part of, and for moving this proud tradition forward.

Thomas Boyd, PhD.
Interim Provost
Colorado School of Mines
On behalf of Mine’s Graduate Student Government, I’d like to welcome you all to this year’s Graduate Research and Discovery Symposium (GRADS). This year roughly 170 students are presenting from all across campus; we hope you all take the time to sit in on presentations not in your field and explore the posters from a different college. We hope GRADS harbors cross-collaboration on campus by encouraging graduate students to expand their research spheres.

We’re honored to have Stefanie Tompkins be this year’s GRADS keynote speaker! Dr. Tompkins is Mine’s new Vice President for Research and Technology Transfer and comes to us from DARPA. Her talk, on April 4th, will focus on Accelerating Science – please join me in welcoming Dr. Tompkins to Mines by attending the keynote and the reception. On Wednesday, we have two workshops delivered by Dr. Ye Li and Dr. Werner Kuhr – both workshops will be very engaging and I encourage all of you to attend if you can. GRADS has a new feature this year, the finals of the Three Minute Thesis competition, which occurs on Thursday afternoon. These short talks give a high-level overview of the speaker’s research, resulting in concise, dynamic talks.

GRADS would not be possible without the amazing support from my organizing committee (all graduate students as well): Daniel Mawhirter, Hayden Powers, Kaveh Amini, Kirsten Blagg, Nora Buggy, Ryan Collette, Tommy Fuerst, Joshua Koubek, Warren Colomb, and Jacque Daves. In addition, all the wonderful judges and volunteers who could come out to support the graduate community here at Mines. Special thanks go to Andrew Proudian, GSG’s President. Without him, none of this would be possible.

As many of you know, GRADS is put on by graduate students for graduate students here on campus. If you’d like to help with GRADS, we are always excited to have people join our team. If you’re interested, please contact me at caitlincrawford@mines.edu

I look forward to seeing everyone at the conference!

Caitlin Crawford
GRADS Organizer
Physics/Material Science PhD Student

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2017-2018 Graduate Student Government

Executive Officers:
President, Andrew Proudian
Vice President, Caitlin Crawford
Academic Chair, Heather Lammers
Social Chair, Tommy Fuerst
Treasurer, Malcolm Davidson
Secretary, Allie York

CASE Representatives:
Chemical and Biological Engineering, Nora Buggy
Chemistry, Joshua T. Koubek
Metallurgical and Materials Engineering, Rachel L. Sherbondy
Physics, Kirsten E. Blagg

CECS Representatives:
Applied Mathematics and Statistics, Michael Kelley
Civil and Environmental Engineering, Meaghan E. Guyader
Electrical Engineering, Dana P. Martin
Computer Science, Daniel Mawhirter
Mechanical Engineering, Najmus Saqib

CERSE Representatives:
Economics and Business, Ryan Courtney
Geology and Geological Engineering, Lane Boyd
Geophysics, Hayden Powers
Liberal Arts and International Studies, Cass Whaley & Eros Mizidy
Mining Engineering, Joe Borgious
Petroleum Engineering, Kaveh Amini

Interdisciplinary Program Representatives:
Hydrology, Kenneth R. Swift Bird
Materials Science, Natalie R. Seitzman
Nuclear Science, Ryan Collette
Operations Research with Engineering, Mark Husted
Underground Construction and Tunneling, Bradley Meyer
Corporate Sponsor

BEER, WINE, FOOD, & PEOPLE

Barrels & Bottles Brewery
600 12th Street
Golden, Colorado 80401
720-328-3643
www.barrelsbottles.com

Registration

Please register ahead of time online if you are not a presenter. All presenters are already pre-registered if you were accepted to the symposium. Day of registration will be on Thursday April 5th in front of Ballroom A in the Ben Parker Student Center. Registration entitles you to all events, workshops, presentations, and ceremonies. Opportunity to Interact with scientists and engineers from around campus.

GRADS Committee

Caitlin Crawford — Chair of Committee
Tommy Fuerst — Social
Warren Colomb/Kirsten Blagg — Keynotes & Workshops
Jacque Daves/Hayden Powers — Poster Sessions
Nora Buggy — Marketing
Ryan Collette — Technology
Joshua Koubek — Deliverables
Kaveh Amini — Judges
Daniel Mawhirter — Oral Sessions
Key Note Speaker

Dr. Stefanie Tompkins  
*Vice President for Research and Technology Transfer*

Speech Entitled:  
**Accelerating Science**  
April 4th, 2018 18:00-19:00  
CoorsTek Center for Applied Science and Engineering Room 130

**Personal Background:**
Dr. Stefanie Tompkins has recently joined the MINES community this February as the Vice President for Research and Technology. Previously, Tompkins, was the acting Deputy Director at DARPA (Defense Advanced Research Projects Agency) and has held many leadership and program management roles during the last 10 years with the agency. She will be overseeing all research activity here at MINES, being the university’s public face for its vast and ever expanding research portfolio. While facilitating continued expansion and relationships with government and industrial projects here at MINES.

**Speech Description:**
Is science accelerating? Should it be? The world is changing, rapidly and dramatically, and the types of challenges we now face are growing in complexity. Science and engineering have the potential to address many such challenges. The same forces that are changing the nature of the world’s problems are also acting to change — and potentially accelerate — science itself. Automation, artificial intelligence, data analytics, even online communities to spark serendipity, are all part of the human-machine partnership that is increasing the rate of scientific discovery and technology development. Let’s explore some examples, and consider the benefits (and pitfalls) of these tools and their potential impact on our world.
Educational Workshops:

Tools and Workflows: What’s your pipeline for productive research?

Presenter: Dr. Ye Li from the Arthur Lakes Library
April 4th, 2018  13:00—14:00
CoorsTek Center for Applied Science and Engineering — Room 130

In this connected world, a vast ecosystem of digital tools and platforms is revolutionizing the research and publishing workflows for scientists and engineers. Choosing the right tools and developing best practices can improve researchers’ efficiency and impact under the increasingly collaborative research environment. This workshop will highlight an array of digital tools for research and how they connect to each other throughout the research lifecycle. For example, how brainstorming tools connect you to action plans; how databases connect you to reference management and note-taking; how electronic lab notebooks connect you to data management and sharing; how script-based data analysis and version control tools connect you to reproducible research; and how digital repositories and scholarly identity connect you to reusable publications and trackable impact etc. Through discussion and hands-on activities, you will learn to:

- Identify what tools can fill the gap between your research activities and your digital workflow
- Understand and apply a set of principles to select useful tools
- Cultivate good practices for reproducible and collaborative research

Entrepreneurial tips, tricks and processes to help you land your next job!

Presenter: Dr. Werner Kuhr from the Center for Entrepreneurship & Innovation
April 4th, 2018  15:00—16:00
CoorsTek Center for Applied Science and Engineering — Room 140

When most people think of Entrepreneurship, they think of starting a new company or business. In reality, the basic aspects of entrepreneurial thinking apply to almost any form of new venture, whether it’s a business, a student club, or a new job. There are a few simple tricks that can help you present your value and your expertise in a way that most people will appreciate, whether they are technical or not. This workshop is designed to help you get the most out of an interview or a job opportunity by presenting your value succinctly and understandably. You will learn about the support that the Center for Entrepreneurship and Innovation can provide for you in the development of your ideas and your research career.

3 Minute Thesis (3MT®) Competition Finals

Organizer: Dr. Wendy Zhou
Cosponsored: Arthur Lakes Library, Graduate Student Government, and the Office of Graduate Studies

April 5th, 2018  16:45 — 17:30
Ben Parker Student Center — Ballroom A

The 3MT® celebrates the exciting research conducted by graduate students around the world. Developed by The University of Queensland (UQ), the competition cultivates students’ academic, presentation, and research communication skills. Presenting in a 3MT® competition increases their capacity to effectively explain their research in three minutes, in a language appropriate to a non-specialist audience. Competitors are allowed one PowerPoint slide, but no other resources or props.

We are bringing this competition to our thesis-based graduate students, including both doctoral and master’s students, this year. The competition will be carried out by three rounds. This will be the last round for the competitors. For more information check out https://www.mines.edu/graduate-admissions/3mt/ and sign-up next year for your chance to win one of the following prizes:

Winner: $1,000  Runner-up: $500  People’s Choice Winner: $250  Top 10: $50

Award Ceremony:

Presenter: President Paul Johnson of MINES
April 5th, 2018  17:30—18:30
Ben Parker Student Center - Ballrooms A/B

This is the celebration of everyone’s hard work on their individual research projects and were the awards will be given out for best presentations for the individual sessions. This is also the place in which the winner of the Three Minute Thesis will be announced There will be a small buffet and drinks. This event is free of charge.
How to read the technical program:

**Speaker/Presenter Instructions:**

All Speakers and poster presenters should register for the special events that will be going on throughout the symposium. You should prepare your presentation according to the following regulations. Additionally, please arrive to the room 10 minutes prior to the start to set up and make sure all presentations are displaying accurately. If you need to withdraw your presentation, please contact Caitlin Crawford (caitlincrawford@mymail.mines.edu)

**Posters:** Your posters should be a max of 4 feet by 3 feet. You may have handout material if desired but do not have any three dimensional presentations. One poster per poster abstract will be free of charge to print at CCIT from 3/16-4/3. Please follow CCIT’s poster printing instructions and be patient and polite. Easels and clips will be provided and your spot will be assigned.

**Oral:** Your oral presentation should be made under the understanding that you will have 10 mins to cover your material followed by 2 mins of Q&A. Times will be strictly enforced regardless of progress of presentation. You will use the room’s laptop and not your personal laptop so please bring your presentation on a USB as a .ppt or .pdf and test it out prior to the start of the session. A laser pointer may/may not be provided so please bring your own if you require one.

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**Geophysics**

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<tr>
<th>Session Name</th>
<th>Ben Parker Student Center</th>
<th>Ballroom C</th>
<th>09:00—10:30</th>
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<tr>
<td>09:00</td>
<td>Introductory Remarks</td>
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<tr>
<td>09:04</td>
<td>(O1) Diffraction reconstruction using template matching and hyperbolic Radon transform. A.K. Arias</td>
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**Energy & Electrochemistry**

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<th>Ballroom E</th>
<th>09:00—10:30</th>
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<tbody>
<tr>
<td>09:00</td>
<td>Introductory Remarks</td>
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<tr>
<td>09:04</td>
<td>(O7) Characterization of Perfluorosulfonic Acid Proton Exchange Membranes with Heteropolyacid Functionalized Fluorolastomer at Low Temperature and High Humidity Conditions. J.L. Hoffman</td>
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**Oral / Poster Time & Number**

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<td>(O1) Diffraction reconstruction using template matching and hyperbolic Radon transform. A.K. Arias</td>
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**Session Name**

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<td>Geophysics</td>
<td>Ballroom C</td>
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<tr>
<td>Energy &amp; Electrochemistry</td>
<td>Ballroom E</td>
<td>09:00—10:30</td>
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underground coal mines? Also be predictive of roof instability in the Coal Mine Roof Rating (CMRR) could be established in the Washakie Basin, Wyoming. R. M. Maxwell

10:40 — Introductory Remarks
10:44 — (O13) Correlations between Earthquake Rupture Propagation and Radiated Seismic Energy. Z. Khademian


11:12 — (O15) Continental-scale integrated groundwater-surface water hydrologic modeling and applications. M.M. Forrester; R.M. Maxwell; L.E. Condon; B. Hector

11:26 — (O16) Evaluating Landslide Risk Management in Guatemala City through a Study of Risk Perception and Behavior Changes. D.W. LaPorte; P.M. Santi


11:54 — (O18) What factors over and above those included in the existing Coal Mine Roof Rating (CMRR) could also be predictive of roof instability in underground coal mines? M.C. Young

12:08 — Closing Remarks

Technical Program

Geology & Mining
Ben Parker Student Center
10:40—12:10

Math & Modeling
Ben Parker Student Center
10:40—12:10

Biotechnology & Catalysis
Ben Parker Student Center
10:40—12:10

CECS I & II Poster Session
Ben Parker Student Center
09:00—12:00

10:40 — Introductory Remarks
10:44 — (O19) A computational model of platelet aggregation under flow. N.A. Danes; K. Leiderman

10:58 — (O20) An OSC Discretization of the Pressure Poisson Reformulation of the Navier-Stokes Equations. N. Fisher; B. Bialecki

11:12 — (O21) Approximate Bayesian Computation on a Spatial SEIR Model for Ebola. K. Martinez

11:26 — (O22) Investigating the Role of Interindividual Differences in Circadian Phase Response Curves. N. Stack; C. Diniz Behn

11:40 — (O23) Luxembourg’s space mining law: The necessity to establish a legal framework before mining in space. N. Karvelas

11:54 — (O24) Anisotropic magnetic susceptibility and its forward modeling. Z. Liu, Y. Li

12:08 — Closing Remarks

10:40 — Introductory Remarks

11:00 — (O26) A Microfluidic Model of Hemostasis. M. Sorrells

11:15 — (O27) Determining Oxygen Binding Behavior of Nitrogen-Functionalized Carbon with Near-Ambient Pressure X-ray Photoelectron Spectroscopy. M.J. Dzara; K. Artyushkova; C. Ngo; M.B. Strand; J. Hagen; S. Pylpyenko

11:30 — (O28) Integrating bio and inorganic catalysts in supported heterogeneous systems for small molecule synthesis. M.M. Moyer; B.G. Trewyn

11:45 — (O29) Catalytic conversion of bioderived muconic acid to produce drop-in cyclic commodity monomers. A.E. Settle; L. Berstis; N.A. Rorrer; H. Hu; R. Richards; G.T. Beckham; M.F. Crowley; D.R. Vardon

12:00 — Closing Remarks

(P1) Comparison of Methods for Calculating the Rate of Appearance of Exogenous Glucose. K. Bartlette, B.C. Bergman, K.J. Nadeau, M. Cree-Green, C. Diniz Behn

(P2) Disruptive Nighttime Sleep in Pediatric Narcolepsy. A. Colclasure; C. Diniz Behn; K. Maski; E. Little; E. Steinhardt; T. Scammell

(P3) A Novel Mathematical Model of Thrombin-Fibrin binding. M. Kelley; L. Haynes; K. Leiderman

(P4) Spatial Modeling of the American Community Survey. P. Simonson

(P5) Thermal Conductivity of Engineered Growth Media Under Varying Saturation Conditions. S. Byers

(P6) Comparative life cycle analysis of mainstream nitrogen removal methods in municipal wastewater treatment. C. Coffey

(P7) A Non-Linear Ultrasonic Method for Damage Characterization in Brittle Sandstone. D. Shirole; A. Hedaya; G. Walton

(P8) Hygrothermal Monitoring and Modeling of Mass Timber. S.J. Kordziel

(P9) Implications of climate change and needle litter decay in montane ecosystems. L.T. Leonard; K. Mikkelson; J.O. Sharp
Technical Program

(P10) PFAS Remediation: A 6 Month Field GAC Rapid Column Test Combined with Carbon Characterization. C.J. Liu

(P11) Computational Fluid Dynamical Model of Hydraulic Selector Technology in a Secondary Clarifier for the Removal of Poor Settling Floc. R. Maltos; R. Holloway; T. Cath

(P12) Impacts of Memorandums of Understanding on public trust of the oil and gas industry and local governments: A comparative case study of two front range communities. F.A. Marlin; J.M. Smith


(P14) Evaluating the Impact of Lanthanide Series Elements on Municipal Wastewater Treatment by Microorganisms. K. Rasmussen

(P15) Quantifying Total Nitrogen Removal and Greenhouse Gas Production in an Open-Water Wetland. A.P. Reed

(P16) Calibration for temperature effects on low-cost soil moisture content capacitance probes. M.R. Schwartz; K.M. Smits; T. Sakaki; Z. Li; A. Moradi

(P17) Metabolic investigation of microbial communities found in a sulfur-dominated glacial spring system in the Canadian High Arctic. C.B. Trivedi; B.W. Stamps; G.E. Lau; A.S. Templeton; S.E. Grasby; J.R. Spear

(P18) Identifying Genetic and Phenotypic Markers of Alzheimer’s Disease: Joint Regression and Classification with Longitudinal Data. L. Brand

(P19) MITSI Transformations. S. Elbeleidy

(P20) Machine Learning for Encrypted Amazon Echo Traffic Classification. R.B. Jackson

(P21) Multiple Incomplete Views Clustering via Non-negative Matrix Factorization with its application in Alzheimer disease analysis. K. Liu; H. Wang

(P22) Predicting Progressions of Cognitive Outcomes via High-Order Multit-Modal Multi-Task Feature Learning. L. Lu

(P23) Website Fingerprinting by Power Estimation Based Side-Channel Attacks on Android 7. Y. Qin; C. Yue

(P24) Effective Mobile Web User Fingerprinting via Motion Sensors. Z. Yang

(P25) A Low Current Ripple High Step-Up Coupled Inductor DC-DC Converter Utilizing an Improved Voltage-Multiplier Cell for PV Applications. A. Alsaleem; M. Simoes

(P26) Optimal Power Reserve of Wind Turbine System Participating in Primary Frequency Control. A. Bubshait; M. Simoes


(P28) Design of an Isoflux Antenna for CubeSats. J.E. Diener; R.D. Jones; A.Z. Atef


(P30) Atomic Norm Minimization for Damped Modal Analysis. J.W. Helland

(P31) Model predictive shutdown control for SUMR wind turbine. S. Kianbakht; K. Johson

(P32) A Variation of the MUSIC Algorithm for Spectral Analysis with Missing Data. S. Li; H. Mansour; M.B. Wakin


(P34) A Cost-Effective Far-Field Antenna Pattern Measurement System. K. Patel; R. Jones; A. Elsherbeni

(P35) Sparse Sampling Methods for Stochastic Wind Farm Control. T.S. Taylor; K.E. Johnson

(P36) Introduction to Smart Grid Tesbed. T. Torres; C. Casey; E. Duran


(P38) Performance Analysis of Parallel Higher Order FDTD Methods. A. Weiss; M. Hadi; A. Elsherbeni

(P39) Chess Piece Recognition Using Oriented Chamfer Matching with a Comparison to CNN. Y. Xie; G. Tang; W. Hof

(P40) Directional of Arrival Estimation for Reverse RFID Localization. A.D. Zarrini; A. Elsherbeni; J.F. Brune

(P41) In Situ Characterization of the Deformation Mechanisms Present in Biaxially Loaded Magnesium Alloys. Z.D. Brunson

(P42) Structural Adhesion of Thermoplastic Composites for Wind Turbine Blades. P. Caltagirone

(P43) Renewable Energy Analysis in the Fort Berthold Indian Reservation. M. Fathollahzadeh; P.C. Tabares-Velasco

(P44) Multiscale Investigation of Mechanical and Microstructural Properties of Nickel-Based Superalloy Inconel 718 Manufactured by Powder-Bed Selective Laser Melting. T.G. Gallmeyer; S. Moorthy; B. Aminahmadi; B. Kappes; A.P. Stebner
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
<th>Location</th>
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<tbody>
<tr>
<td>15:00</td>
<td>Introductory Remarks</td>
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<tr>
<td>15:05</td>
<td>(O48) An overview of sustainability analysis methods of a new biofuel feedstock: bagasse from gua gum.</td>
<td>V.S. Mealing</td>
<td>Energy &amp; More</td>
</tr>
<tr>
<td>15:20</td>
<td>(O49) GHG-LCA of Lobolly Pine and Switchgrass Bioenergy Feedstocks Cultivated in the Southeast US.</td>
<td>T.M. Harris; P. Eranki; T.L. O'Halloran</td>
<td>MME, PE, &amp; EE</td>
</tr>
<tr>
<td>15:35</td>
<td>(O50) Investigating nutrient cycle, GHG, and land use impacts shared in the productions of fuel ethanol and animal-based foods.</td>
<td>M.M. Algren</td>
<td></td>
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<tr>
<td>15:50</td>
<td>(O51) Optimization of a methanotrophic bioreactor for PHB production.</td>
<td>C.D. Billingsley</td>
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</tr>
<tr>
<td>16:05</td>
<td>(O52) Non-target Characterization of Endocrine Active Trace Organic Materials Impacting Minnesota Sunfish Spawning Habitats.</td>
<td>J.M. Marr; T.Y. Cath; J. Vanneste; A. Pieja; J. Lampe</td>
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<tr>
<td>16:20</td>
<td>Closing Remarks</td>
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<tr>
<td>15:00</td>
<td>Introductory Remarks</td>
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<tr>
<td>15:05</td>
<td>(O53) Study of Space Charge Regions in BaCe0.8Y0.2O3-δ – Ce0.8Y0.2O2-δ Hydrogen Separation Tomography.</td>
<td>G.L. Burton; D.R. Diercks; B.P. Gorman</td>
<td>PHYSICS</td>
</tr>
<tr>
<td>15:20</td>
<td>Characterizing Amorphous Precursors to High Phase Fraction Brookite TiO2 Thin Films.</td>
<td>J.S. Mangum; J.E.S. Haggery; D.A. Kitchaev; O. Agirseven; L.M. Garten; J.D. Perkins; D.S. Ginley; J. Tate; B.P. Gorman</td>
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<tr>
<td>15:35</td>
<td>Polarization Reconfigurable Printed Dipole Antennas.</td>
<td>A.A. Desai</td>
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<td>16:05</td>
<td>Development of an Integrated Fracturing Simulation and Optimization Software for Tight Sandstone Reservoirs.</td>
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<td>15:05</td>
<td>(O60) Novel plastic scintillator formulations for efficient gamma/neutron discrimination, increased physical material properties, and enhanced photo-peak detection.</td>
<td>J. Latta</td>
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<td>15:20</td>
<td>(O61) Development of a radioactive holmium-166 skin patch to treat skin diseases.</td>
<td>M.A. Ritter; F. Sarazin; J. Zimmerman</td>
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<td>Phase boundary mapping for carrier density control in quaternary diamond-like semiconductors.</td>
<td>B.R. Ortiz</td>
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<td>High Harmonic Generation under the effects of Adaptive Optics.</td>
<td>D.D. Schmidt; C. Durfee</td>
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<td>(P55) The Janus headed nature of succinate in acute lung injury: alveolar type II specific deletion of succinate dehydrogenase A is protective in acute lung injury.</td>
<td>E.J. Coit</td>
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<td>(P56) A study of transient monitoring of physico-chemical and electro-chemical properties of carbonate formation observed on OH- form of AEM when exposed to air containing CO2.</td>
<td>A.G. Divekar; A.M. Herring</td>
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<td>Enzyme-linked nanosensors for continuous glucose imaging.</td>
<td>M. Ferris; M. Elms; K.J. Cash</td>
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<td>High Precision ALE of SiO2 via Introduction of a Blocking Layer from Hydrocarbon Precursors.</td>
<td>R.J. Gasvoda; S. Wang; E.A. Hudson; S. Agarwal</td>
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<td>Clathrate Hydrate Single Crystals of Tetrahydrofuran: Growth and Inhibition.</td>
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<td>Copper-induced Recrystallization and Interdiffusion of CdTe/ZnTe Thin Films.</td>
<td>Y. Samoilenko; A. Abbas; J.M. Walls; C.A. Walden</td>
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(P94) Understanding rare earth elements (REE) in mineral deposits: simulated speciation in hydrothermal fluids and partitioning in calcite. **E.P. Perry; A.P. Gysi**

(P95) Lithologic Controls on Critical Zone Processes in a Varibly Metamorphosed Shale-hosted Watershed. **R.E. Pommer**

(P96) Towards a Better Understanding of Water Stores and Fluxes: Model Observation Synthesis in a Snowmelt Dominated Research Watershed. **A. Ryken; D. Gochis; R. Carroll; L. Bearup; K. Williams; R.M. Maxwell**

(P97) Sedimentology of Lacustrine Associated Reservoir in Transtensional Rift Basin, Lower Talangak Formation, Jatibarang Subbasin, North West Java, Indonesia. **E.H. Sihombing; L.J. Wood**

(P98) Micromechanical Modeling of Granite and its Application in Investigating Pillar Damage Progresses. **S. Sinha**


(P101) Improving national water modeling: an intercomparison of two high-resolution, continental scale models, ParFlow-CONUS and WRF-Hydro configuration of the National Water Model. **D.T. Tijerina; L.E. Condon; A. Dugger; K. FitzGerald; W. Yu; D.J. Gochis; R.M. Maxwell**

(P102) Using stratigraphic thicknesses to determine sub-basin architecture and inversion mechanisms in the Central African Copperbelt. **H. Twigg; M. Hitzman**

(P103) The solubility of monazite light rare earth element phosphates (LaPO4, PrPO4, NdPO4, EuPO4) in aqueous solutions from 100 to 250°C and psat. **C. Van Hoozen; A. Gysi**

(P104) Scaling Relationships of Channel-lobe Deposits in Large Fluvial Fan Systems: Implications for Subsurface Reservoir Prediction. **J. Wang; P. Plink-Bbjörklund; Z. Jobe**

(P105) InSAR Analysis of Surface Subsidence above a Headrace Tunnel in the Sri Lankan Highlands. **K.C. Wnuk; W. Zhou; G. Walton**

(P106) Formation of high-grade low-sulfidation epithermal deposits of the Omu district, Hokkaido, Japan. **L.R. Zeck; T. Monecke; T.J. Reynolds; Q.T. Hennigh**

(P107) Geothermal Bioreactors for Mine Influenced Water. **L. Dunnington**

(P108) CO2 accessibility on micropores of shales and the implications for carbon geo-sequestration. **N. Joewondo**


(P110) Virtual Characterization of Miscible EOR Displacement. **M. Merritt**

(P111) On the Mechanism of Multicomponent Klinkenberg Effect. **S. Wang**

(P113) Geomechanical Property Alterations in Seal and Organic-Rich Shale Formations during lifecycle operations: The Role of Fluid Type and Composition Selection. **O. Adekunle; N. Joewondo; J. Wang; O. Adekunle; N. Joewondo**

(P114) Carbon-Coated Magnesium Oxide Catalysts for 2-Pentanone Condensation to Aviation Fuel Products. **A.M. York; D.R. Vardon; B.G. Trwyn; R.M. Richards**

(P115) Topography and Slope Processing in a Hydrologic Model. **S. Trutner; L.R. Zeeck**

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If you have any suggestions or comments about this symposium please feel free to e-mail us at CSM.GRADS@gmail.com

Thank you ☺

See You Next Spring