FROM THE EDITORS

As the final days of the semester are winding down, we bring you the final newsletter issue of the year. Keep up the hard work as you push to study for those finals, complete that manuscript, and collect as much data as you can before the clock strikes midnight for 2017. It has been an exciting year for everyone in the department as we have seen CEEES continue to grow and push the bounds of what we are capable of as students, researchers, and a CEEES community. We sincerely hope everyone feels productive, energized, and welcome here in the department. We want the news we provide to help you feel informed, inspired, connected, and part of something bigger than yourself in whatever way it can. Notre Dame is a large community with plenty going on, and it may seem easy to get lost in it all when our research is so central and all consuming. Take a second to look left and right from time to time in the lab/office and remember, as some spunky high schoolers once told us, we are all in this together.

Cheers,

Ryan Alberdi, Andrew Schranck, and Dave Burney, Newsletter editors
ANNOUNCEMENTS

Conferences

Junyeol Kim recently attended the 2017 SNO Conference hosted by the Sustainable Nanotechnology Organization from November 5-7 in sunny Los Angeles, California. He presented a podium presentation entitled *Effects of environmental parameters on the protein corona of TiO2 nanoparticles in the presence of natural organic matter*. He was also awarded a travel grant at the conference to support his attendance.

A large group of CEEES grad students from various disciplines are presenting their research at the first annual *Colleges of Science and Engineering Joint Annual Meeting* Friday, December 8 in Jordan Hall of Science. In case you missed it by email, you can find the full details, including schedule and abstracts at the following website: [https://goo.gl/jvxnvC](https://goo.gl/jvxnvC). CEEES students presenting include: David Burney, Karl Cronberger, Timothy Gunther, Stefanie Lewis, Michael Torcivia, Andrew Schranck, and Junyeol Kim. There will be free lunch and then drinks during a social hour following the podium presentations. Feel free to join in at any time throughout the event from 10 am-5 pm.

Call for CEEES Grad Student Newsletter Contributors

The Newsletter editors are strong believers in the value of news, especially the effect CEEES grad student news has on one another. The Newsletter is a space where everyone can catch up on each other’s accomplishments amidst the busy lives grad students lead. The Newsletter is also a great way for grad students to get involved in the department and gain perspective and exposure in the CEEES department.

The Newsletter editors are eagerly searching for students with 1-2 hours a month to contribute to the sustainability of this publication, to continue to provide CEEES grad students with updates and news many months, semesters, and years into the future.

If you are interested in contributing your time and talent to making this publication a success, contact Andrew Schranck, Ryan Alberdi, or David Burney for more information. Their contact info is listed at the end of the Newsletter.
CEEES Holiday Reception

Mark your calendars for the CEEES Christmas Gathering on Wednesday **December 13 from 1-3 pm** in the CEEES Department office, 156 Fitzpatrick Hall. What a great opportunity to take a break midday and catch up with some folks you may not have seen in the halls in a while. Do not forget to wear something festive for the occasion for a chance to win a free lunch at your favorite campus dining establishment. Be there or be square!

**What Would You Fight For?**

In case you missed it, the Simonetti group brought the CEEES Department to the big screen (in Notre Dame Stadium) and televisions all across the country when they were spotlighted by NBC during the football game against Navy in the *What Would You Fight For?* commercial. The article brought attention to an undergraduate Navy ROTC student working in Dr. Simonetti’s lab, and the important work being performed by all the members of the group, especially the graduate students (Stefanie Lewis, Corinne Dorais, Timothy Gunther, and Corinne Kuebler) to protect our country with their innovative techniques used in Nuclear Forensics. If you have not done so yet, check out the segment, see link below, and remember, we are the fighting Irish!

CEEES Graduate Student Organization (GSO)

One last CEEES GSO event for the semester brought everyone out to battle the elements, this time the wind and the rain, for the Notre Dame vs. Navy football game tailgate on **Saturday, November 18**. The CEEES Department teamed up with the AME Department for yet another successful group event at Innovation Park. Though it was too wet for corn hole or KanJam, the hand warmers and makeshift barbecue grill warming station kept us going as we carried on in preparation for a Notre Dame victory over the Midshipmen 24-17 with plenty of tasty food and drinks. Here’s to looking forward to more great tailgating in 2018, but in the meantime, let’s look forward to indoor social activities while the winter weather sets in.

If you would like to help contribute to ideas or planning for upcoming CEEES GSO events, feel free to reach out to any of the organizers: Andrew Schranck (aschranc@nd.edu), Theresa Aragon (aragon.10@nd.edu), Lara Grotz (sisman.1@nd.edu), Stefanie Lewis (lewis.184@nd.edu), or Keith O’Connor (keith.F.O’Connor.211@nd.edu) They would love to hear from you.

Some fine Irish fans from the CEEES and AME departments who came out to the tailgate and game on November 18.
GRADUATE STUDENT UNION (GSU) UPDATE

The most recent council meeting for the GSU took place on Thursday, November 29 in the LaFortune Student Center. The various meeting agenda items are summarized below.

- GSU is moving to Duncan Student Center (2nd floor) over winter break
  - Look out for announcement of new welcome events soon!
- Health Care Questionnaire
  - Survey will be used to make sure the administration is aware of grad student concerns
  - Also will help us to make sure the GSU website has useful information for students
  - Additional questions: email Health Care Chair, Kris Murray (kmurray5@nd.edu)
- Do you have an event that is open to other departments? Email our Social Chair, Valentina Geri (vgeri@nd.edu) with flyers and any other information to be posted on GSU social media (subject to approval by executive board)
- Hammes Bookstore is looking for a grad student to serve on their Advisory Committee (2x a year meetings). Contact Mimi Beck (mbeck1@nd.edu) if you are interested in serving on this committee
- If you have any questions, concerns, or information, reach out to your department rep, Andrew Schranck (aschranc@nd.edu) and let him know!
  - Make your voice heard! All are welcome at GSU Meetings which are the 3rd Thursday of the month (next meeting: January 18, 2018, 6:30 pm)
  - You can also submit questions/concerns to the GSU executive board or to gsu@nd.edu for concerns to be brought to the council anonymously
- GSU Survey on Visa Assistance Link: https://goo.gl/WXwcCg
GRADUATE STUDENT SPOTLIGHT

Haylie Lobeck is a 4th year PhD candidate working with Dr. Peter Burns. Her research focuses on the material science of actinide compounds, specifically uranium minerals and uranyl peroxide nanoclusters. The Burns group just received a National Nuclear Security Administration (NNSA) grant for $12.5 million to further their collaboration and research efforts into the analysis of radioactive material, including uranium, neptunium, and plutonium.

Haylie has two main research projects. The first focuses on insoluble uranium minerals, like uranyl phosphates and arsenates, and how their solubility changes in alkaline environments containing hydrogen peroxide. The current way to reprocess spent nuclear fuel involves dissolving the nuclear waste in boiling nitric acid and extracting the uranium out with harsh organic separations so it can be recycled back into new fuel pellets. Her ultimate goal for this research project is to find a more environmentally friendly and cost-effective way to dissolve nuclear materials using just a mild base and hydrogen peroxide.

Haylie’s second project focuses probing the thermal properties of uranyl peroxide cage clusters (nanoclusters). Nanoclusters are essentially buckyballs (https://goo.gl/YQ9DDY) made out of uranium, and the Burns group has been exploring their unique properties for the past ten years. Haylie’s project uses in-situ Raman spectroscopy (https://goo.gl/HTCGhH) to monitor the stability of these clusters in aqueous solution up to 180°C. Knowing what temperatures they can exist at can help predict their formation in different environments that are difficult to test experimentally; like in a geologic repository or spent fuel pond which can be found at elevated temperatures.

Haylie passed her candidacy exam in May of 2017 (woo hoo!) and has been focusing on finishing up her research projects and publishing all of her results. She has presented her research at American Chemical Society National meetings and at Department of Energy (DOE) Energy Frontier Research Center meetings. She is currently one of the lead student coordinators for the DOE’s EFRC Early Career Network where they work to build a network of graduate students and post docs throughout the country who are researching energy related topics. She is also a student representative on the University of Notre Dame Sustainability Strategy Communications committee. The committee is working on ways to best communicate the sustainability efforts Notre Dame has accomplished and what the University’s goals are moving forward. When she graduates, she hopes to continue researching nuclear materials and nuclear energy at a national lab.

Lab link: http://www.petercburns.com/home.html
GROUP SPOTLIGHT

The Structural DYNAMics and Monitoring (DYNAMO) Laboratory, led by Dr. Tracy Kijewski-Correa, includes graduate students Andrew Bartolini (fifth year) and Karen Angeles (second year). Andrew Bartolini’s research focuses on the structural health monitoring of tall buildings in order to validate design assumptions and better understand the tall building’s performance relative to computer models generated to predict their performance. With manufactured systems, the performance of computer models can be validated through full-scale testing. However, the size, scale, and complexity of tall buildings (200+ meters in height) does not have the same luxury. Therefore, various combinations of sensors must be used to determine the in-situ properties of tall buildings, which are then used to validate the performance of computer models. Furthermore, this information can be curated in a database, which will provide the structural engineering community with insights into the actual behavior of tall buildings, which will lead to more accurate design assumptions. Karen Angeles’ research is on Integrated Life Cycle Assessment for the Resilience and Sustainability of Buildings. This is an interdisciplinary project incorporating the fields of structural engineering, computer science, and architecture; the project aims to provide the first integrated life-cycle assessment tool which can account for all important sources of uncertainty, temporal and geospatial dependencies, and interactions between sustainability and resilience quantifications. With the growing national mandate to better steward our environment, the building industry is faced with the task of incorporating sustainability into projects. This is non-trivial considering that in order to measure the true environmental impact of a building, one must consider both embodied and operational energy. Further, the elements which comprise a building as well as its location affect its vulnerability to hazards. Unfortunately, current practice often only considers the operational energy of a building, and sustainability and resilience quantifications are done separately. Therefore, to help address the current deficiencies in the design of resilient, sustainable buildings, this LCA tool will not only preserve the intrinsic relationship between multi-hazard resilience and sustainability, but it is also being developed in such a way to facilitate its adoption into practice so current and future generations of designers can make more informed decisions in their design of RSBs.

Lab Link: https://dynamo.nd.edu/

Andrew Bartolini  Karen Angeles
## THE GRADUATE SCHOOL – SCHEDULE OF DEADLINES

<table>
<thead>
<tr>
<th>Event</th>
<th>Fall 2017</th>
<th>Spring 2018</th>
<th>Summer 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching assistant list submitted to Graduate School</td>
<td>Aug. 20</td>
<td>Jan. 4</td>
<td>—</td>
</tr>
<tr>
<td>First class day</td>
<td>Aug. 22</td>
<td>Jan. 16</td>
<td>Jun. 18</td>
</tr>
<tr>
<td>All course changes</td>
<td>Aug. 29</td>
<td>Jan. 23</td>
<td>—</td>
</tr>
<tr>
<td>Initial graduation list available in GradAdmin (Registrar)</td>
<td>Sept. 5</td>
<td>Jan. 30</td>
<td>Jun. 26</td>
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<tr>
<td>Fall/Spring break begins</td>
<td>Oct. 14</td>
<td>Mar. 10</td>
<td>—</td>
</tr>
<tr>
<td>Course discontinuance</td>
<td>Oct. 27</td>
<td>Mar. 23</td>
<td>—</td>
</tr>
<tr>
<td>Preliminary theses/dissertations submitted for formatting check*</td>
<td>Nov. 6</td>
<td>Mar. 5</td>
<td>Jun. 11</td>
</tr>
<tr>
<td>Thanksgiving break begins (Wed. – Sun.)</td>
<td>Nov. 22</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Easter break begins (Fri. – Mon.)</td>
<td>—</td>
<td>Mar. 30</td>
<td>—</td>
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<tr>
<td>Master’s comprehensive examinations &amp; PhD dissertation defenses**</td>
<td>Nov. 20</td>
<td>Apr. 3</td>
<td>Jul. 2</td>
</tr>
<tr>
<td>Final theses/dissertations submitted to Graduate School</td>
<td>Nov. 27</td>
<td>Apr. 9</td>
<td>Jul. 9</td>
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<tr>
<td>All admission to candidacy forms submitted to Graduate School</td>
<td>Dec. 4</td>
<td>Apr. 12</td>
<td>Jul. 16</td>
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<tr>
<td>Last class day</td>
<td>Dec. 7</td>
<td>May 2</td>
<td>Jul. 27</td>
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<tr>
<td>Final exams begin</td>
<td>Dec. 11</td>
<td>May 7</td>
<td>—</td>
</tr>
<tr>
<td>Graduation date (official degree conferral)</td>
<td>Jan. 7</td>
<td>May 19</td>
<td>Aug. 5</td>
</tr>
</tbody>
</table>

*Formatting checks should be submitted to the Graduate School when the document is given to readers, at least two to four weeks prior to the defense.*

**Reader’s reports must be submitted to the Graduate School at least two days before the defense takes place.**
FELLOWSHIP/SCHOLARSHIP/EMPLOYMENT OPPORTUNITIES

- Graduate Student Union Conference Presentation Grants (Rolling basis)  
  (http://graduateschool.nd.edu/professional_development/professional-development-award-application/)

- Graduate School Professional Development Awards (Rolling basis)  
  (http://graduateschool.nd.edu/professional_development/professional-development-award-application---s-e/)

  (http://www.ndsegfellowships.org/)

- Harriet Evelyn Wallace Scholarship (Deadline, January 3, 2018)  
  (https://www.americangeosciences.org/workforce/harriet-evelyn-wallace-scholarship)

For more funding opportunities or help crafting a winning application contact the Office of Grants and Fellowships (https://goo.gl/xCPHpM). They are a very valuable resource for you whether you are preparing an abstract, a research statement, or a complete proposal.

NEWSLETTER CONTACTS

If you wish to include or contribute news items for the next issue of the newsletter, please contact one of the editorial members below:

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