March 2020 CoMFRE Newsletter

Message from the Director
The world certainly has changed since our December 2019 newsletter. Everyone knows the meaning of self-isolation, social-distancing, and COVID-19. Our education and work locations have also changed. Iowa State’s spring semester changed from in-person to on-line on March 23 (after a week of spring break). We will not have students on campus until mid-summer at the earliest, and our traditional graduation ceremony has been cancelled. Our research enterprise has also changed where we are encouraged to work from home. That is much easier to do for computational researchers, and more difficult for an experimentalist who needs experimental measurements to complete their work. Many students and faculty are now doing a lot of writing, and I foresee a large number of papers and proposals that will be submitted over the next 3 months.

Wherever you may be, I hope you and your family are healthy and safe.

With kind regards,

Theodore (Ted) J. Heindel
Director, Center for Multiphase Flow Research and Education
Bergles Professor of Thermal Sciences
Updated CoMFRE Website
We have been working over the past few months to update our website. Our CoMFRE web address ([https://comfre.iastate.edu/](https://comfre.iastate.edu/)) now contains the updated content. Please check it out and let us know what you think.

CoMFRE and CoMFRE Affiliates in the News

- **A Year in Review: What’s New with CoMFRE?** CoMFRE has undergone notable developments over the course of the past year. After becoming an official center in fall 2017, the center continues to grow as collaboration flourishes and research advances. [https://news.engineering.iastate.edu/2020/02/26/whats-new-with-comfre/](https://news.engineering.iastate.edu/2020/02/26/whats-new-with-comfre/)

- **Examining Sprays with X-rays and High-Speed Imaging:** Researchers in Ted Heindel’s Experimental Multiphase Flow Lab are using X-rays and high-speed imaging to experimentally study the near-field spray region where spray formation occurs as part of an Office of Naval Research project. A collaborating researcher from the University of Illinois Urbana-Champaign, another site for the project, recently visited campus to take advantage of the state-of-the-art resources available at Iowa State. [https://news.engineering.iastate.edu/2020/02/12/using-x-rays-and-high-speed-imaging-to-examine-sprays/](https://news.engineering.iastate.edu/2020/02/12/using-x-rays-and-high-speed-imaging-to-examine-sprays/)

- **Model to improve steel manufacturing – by way of the International Space Station:** Jonghyun Lee, assistant professor of mechanical engineering and CoMFRE faculty member, is leading a multiyear, $750,000 project titled Modeling and Simulations of Electrostatically Levitated Multiphase Liquid Drops. [https://news.engineering.iastate.edu/2020/02/11/model-to-improve-steel-manufacturing-by-way-of-the-international-space-station/](https://news.engineering.iastate.edu/2020/02/11/model-to-improve-steel-manufacturing-by-way-of-the-international-space-station/)

- **Collaboration with AbbVie brings value to CoMFRE:** Graduate students reap benefits from their work with member company AbbVie. [https://news.engineering.iastate.edu/2020/03/11/collaboration-with-abbvie-brings-value-to-comfre/](https://news.engineering.iastate.edu/2020/03/11/collaboration-with-abbvie-brings-value-to-comfre/)

New CoMFRE Faculty Affiliate
This month we welcomed Junxing (Jun) Zheng, Assistant Professor in Civil, Construction and Environmental Engineering, as a new CoMFRE affiliate. His research focus is in the area of particulate materials where he uses advanced computer vision, machine learning, programming, sensor technologies, and numerical/physical modeling to study applications related to geotechnical/materials engineering.

A full list of CoMFRE faculty affiliates can be found here: https://comfre.iastate.edu/faculty-2-2/page/1/

Student Awards

- Bharath Melugiri Shankaramurthy: Iowa Ready Mixed Concrete Associations’ 2020 Scholarship ($2,500), IRMCA Dinner Meeting, March 3, 2020; Advisor: Kejin Wang
- Bharath Melugiri Shankaramurthy: James K Cable Portland Cement Concrete Overlay Scholarship ($1,000), Feb. 2020; Advisor: Kejin Wang
- Yogiraj Sargam: James K Cable Portland Cement Concrete Overlay Scholarship ($1,000), Feb. 2020; Advisor: Kejin Wang

Recently Funded Awards

Feel free to contact the CoMFRE affiliates directly if you have any questions on the projects below.

- “Autothermal Pyrolysis of Western Red Cedar for Dispatchable Renewable Power”, Robert C. Brown and Mark Mba-Wright; Funding Agency: Nebraska Public Power District; New Funding Amount: $22,839.
- “Testing of Durable Elastomeric and Metal Based Icephobic Coatings for Turbomachinery Ice Protection Applications”, Hui Hu; Funding Source: Industry; New Funding Amount: $25,832.
“End-to-end Pipeline for Multi-sensor Data Collection with the Toyota Avalon”; Soumik Sarkar, Anuj Sharma and Shauna L. Hallmark; Funding Source: Industry; New Funding Amount: $29,321.

Recent Journal Publications
Note that CoMFRE affiliates are identified by bold names.


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**Recent Conference Publications and Presentations**

• None this quarter.

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