



A. JAMES CLARK SCHOOL OF ENGINEERING

Department of Materials Science & Engineering



Hello Friends,

I hope you enjoy reading the spring 2020 issue of our TechTracks newsletter! If you've stories or updates to share, please send me an email at jczhao@umd.edu. Thank you, and be well.

- J.C. Zhao, MSE Professor & Chair

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TECHTRACKS NEWSLETTER
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Chair's Message

Over of all, I hope you and your family are safe and healthy during the COVID-19 pandemic, which has fundamentally changed our education, research and daily existence. While our facilities are mostly empty and we are postponing classes at home, we're still doing great things by hope of bringing some projects to the experimental stage.

Langmuir also has attracted high-temperature systems grant the first 4 cases of fusion for nuclear fusion cases - for energy generation and have a sustainable source of heat - nuclear fusion. We're currently funded with the US of Robert Rubin Distinguished Professor of Engineering and is the founding Director of the new Center for Materials Research, which will foster collaborative material development to address global challenges.

The Department is leading the U.S. side of a \$18.4 million project awarded by the National Nuclear Security Administration. This is a major step for us and will continue to elevate our scientific and impact of energy technology.

It was encouraging for me to witness our undergraduate students share our first success story. Our students and postdocs have won numerous awards in the past few months, including the highly competitive 2020 MSE Professional Award. There is one case of awards for bringing back to the field of materials science in MSE.

Thank you for reading, and please suggest our students and our Department.

J.C. Zhao, MSE Chair

His Research Group Makes Cover of Science

A study led by MSE Professor Jiaxing Liu was published on the May 1 cover of Science. Liu and his research team had developed an innovative approach to fabricate ceramic materials, having promising applications for catalytic reactors, fuel cells, SOFCs and other nanoelectronics. The method of ultrasonic high-temperature sintering allows for forming up to 1000-degree Celsius and high cooling rates and more temperature distribution. The process takes less than 10 seconds, which is more than 1000 times faster than the traditional furnace approach.

The team introduced a porous green pellet of ceramic precursor powder between two slices of ceramic that quickly heated the pellet through radiation and conduction, creating high temperatures that forced the ceramic powder to consolidate quickly, a process that can be applied to materials not subject to learn more <https://jps.umd.edu/S&P>

UMD to Lead U.S. Side of \$18.4M U.S./Israel Energy Project

The National Energy Innovation HubCenter awarded will lead the first-year project. The focus of which will be on the development of solid state batteries for both the land (terrestrial) and space (space) sectors. These batteries offer a breakthrough in terms of energy per unit mass and volume at the cell level and, unlike any other, are able to serve numerous end-use sectors. The goal of the HubCenter Energy Center is to promote energy research and economic development through a mix of innovative partnerships.

To learn more: <https://jps.umd.edu/HUBCenterProject>

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