1-2020

Illuminator, Volume 3, Issue 5

Batten College of Engineering & Technology, Old Dominion University

A monthly publication of the Batten College of Engineering and Technology

illuminator

volume 3, issue 5

CONGRATULATIONS
FALL CLASS OF 2019!

Facebook Photo Gallery

PLUS:

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Batten College of Engineering & Technology


I DID THIS
FOR THEM
I love you so much and I am so proud of you! ♥
-Amanda
Tori
Emi
14 mos


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CONGRATULATIONS

Fall Class of 2019!

See more graduation photos on **Facebook!**

tinyurl.com/BCET-Fall-2019

- Photos by Andrea Luna

VIDEO SPOTLIGHT: JORDAN SMITH

Jordan Smith is a senior at Old Dominion University studying Modeling and Simulation. He recently interned at Newport News Shipbuilding working on nuclear aircraft carriers and was offered a position with the company after he graduates. Smith currently works at Newport News Shipbuilding as a co-op in the same department and position that he will work in after graduation. Smith also served as SGA President from fall 2017-spring 2018 where he learned valuable leadership and communication skills. ***See and hear more in this short video:***

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STUDENT SPOTLIGHT: KIARA MOYA-PRERA

Forging her own path

by Matty Madden '21

To say that Kiara (Keke) Moya-Prera has a lot on her plate is an understatement. The Old Dominion University freshman is a civil engineering major, a member of the Naval Reserve Officer Training Corps (NROTC) program and a first-generation college student. While these labels tell you a bit about Moya-Prera, they don't begin to tell her full story.

Her mother was just 15 when she immigrated from Guatemala.

"She did the whole walking-across-the-border thing for three months, actually alone," Moya-Prera said. "She came because her dad passed away, and he was the one maintaining everything. He was the provider of the family. My grandmother was already sick, so there was no one else who could provide for her medications."

Once in the United States, Moya-Prera's mother found work as a painter to provide for her family in Guatemala. From there, she met her husband, an immigrant from Nicaragua. Together, they had Keke. But he changed after she was born.

"He became an alcoholic and started abusing my mom," Moya-Prera said. "She didn't want that environment for me because she always wanted the best for me. She didn't want me to go through what she went through.

"My mom and I have been through so much together. We were kicked out of the house by my dad. We were homeless for a bit. It's always been me and her."

Moya-Prera grew up with her mother in Richmond. As a first-generation student, making her mother proud is a huge priority.

"When I started high school, I saw how proud my mother was when I joined ROTC. Everything I did made her proud," Moya-Prera said. "Ever since I started school, everything I do has meant the world to my family. Becoming a leader in ROTC, graduating from high school and even something simple like me getting my driver's license was a big deal for my family because, being in a family of immigrants, it was like I'm making history. I have to set a bar for my future family."

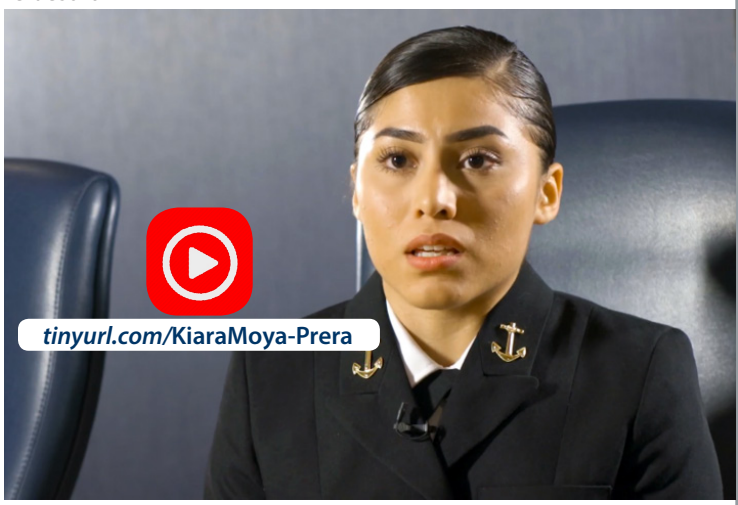
Moya-Prera said she was drawn to the military because she recognized how many doors it could open for her. Being a part of her high school ROTC program led to a scholarship to Old Dominion.

After graduating, Moya-Prera hopes to transfer from the Navy and become an officer in the Marines. She's also considering minoring in something that could help her learn more about immigration.

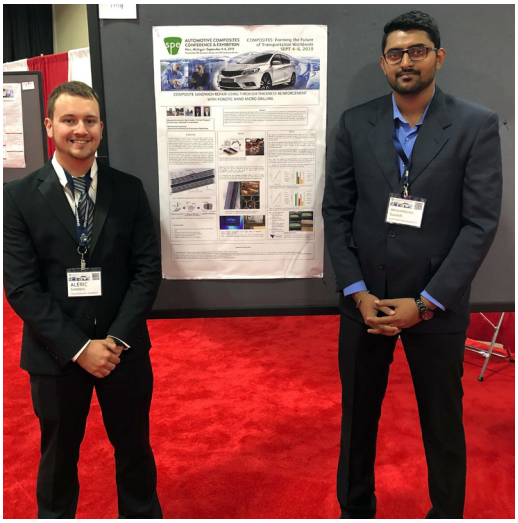
Above all, Moya-Prera wants to continue to make her family proud and give back to them for the support and sacrifices they have made.

"In order to be financially stable, get my education and provide for my mom, I have certain goals to meet. One of my main goals is to make sure I can take care of her and my little sister," she said.

Meet Keke Moya-Prera in this short video:



MAE students present composites research at international conference



ODU master's student Aleric Sanders, along with recent ODU graduate Manjukrishna Suresh

by Matty Madden '21

Old Dominion University mechanical engineering students were among more than 900 attendees from all over the world at the 19th annual Automotive Composites Conference and Exhibition in Detroit, Michigan. The event featured the latest innovations and developments in the field of mechanical engineering.

With four parallel technical tracks over three days, including a total of 87 talks, two evening receptions and an extensive exhibition, this year's conference featured an overwhelming amount of content. The talks spanned a very wide variety of topics, including recent advances in thermoplastic and thermoset composites with carbon or glass fiber reinforcement, novel manufacturing technology solutions, progress in composite additive manufacturing (3D printing), sustainable composite, virtual prototyping, testing and modeling.

Students from ODU presented new research on through-thickness reinforcement (TTR) and the repair of carbon fiber-epoxy sandwich panel composites. The presentation was conducted by recent ODU graduate Manjukrishna Suresh and current master's student Aleric Sanders. The research was partially supported by Jeffress Trust Awards Program in Interdisciplinary Research.

The research was spearheaded by assistant professors Alex Kravchenko and Krishna Kaipa from ODU's Department of Mechanical and Aerospace Engineering.

Kravchenko, who will serve as a technical co-chair of the next year's ACCE, summarized the current research findings.

"The proposed novel repair technique involves micro-drilling of tiny holes through the delaminated damaged regions of panel's carbon fabric skins and rebonding it using submillimeter pultruded carbon fiber rods, then low-viscosity resin is used to seal rods in place. The method is like installing tiny nails into the region of the laminate composite that is damaged," he said.

The key element of the work is the micro-drilling of the tiny holes by using a robotic hand with safe human-robot collaborative features that were conducted in collaboration with Kaipa's research group. Rigorous testing showed that the strength of completely failed sandwich composites with significant delamination or disbond damage was restored to values at or above the benchmark pristine samples via the TTR technique.

As noted by CompositesWorld's contributing writer, Peggy Malnati: "more work is needed, but the research is intriguing and could eventually lead to a non-destructive repair technique."

Composite repair is generally a complex topic and still requires more work as composites become more used in the automotive and aerospace sector, so ODU's findings can offer a novel approach to currently existing repair techniques.

Matty Madden is a junior majoring in public relations

Menna M. Youssef, Ph.D., '05

Old Dominion University alum, Menna M. Youssef, Ph.D., '05 has been elected to the Tau Beta Pi Executive Council, which acts as a board of directors. Youssef earned a bachelor's (magna cum laude) and master's degree in electrical engineering at ODU and completed her Ph.D. at the University of Dayton, focusing her research on pattern recognition and computer vision applications for human activity recognition.

A resident of Virginia Beach, Youssef was initiated into the Virginia Gamma chapter of TBΠ and was Chapter president. She has served as a volunteer for 14 years with TBΠ, first as an advisor for VA Gamma and including her first three-year term as a Councilor which began in 2016. She is currently a member of the Advisor Recruitment and Development Committee.

Youssef was a Graduate Student Research Program fellow and Virginia Space Grant Consortium fellow at NASA Langley researching electromagnetic propagation in aircraft fuselages and interned for NATO working on passive radar scenario testing. As an instructor at ODU, she developed a strong interest in STEM and education reform that led her to work on developing initiatives in rural communities in the Middle East and North Africa region. In 2014, Youssef joined the United States Patent and Trademark Office as a Patent Examiner in the Image Analysis workgroup.

FACULTY SPOTLIGHT: EISAZADEH & KUMAR

Award-winning paper

Hamid Eisazadeh, Ph.D., assistant professor in the Department of Mechanical Engineering Technology received the A. F. Davis Silver Medal Award and a certificate from the American Welding Society (AWS) for his paper, "Exploring the Cooling Process for Residual Stress Reduction in Dissimilar Welds." Presented annually to the author of papers representing a significant contribution in the field of welding including machine design, maintenance and surfacing, and structure design. This is the second time Eisazadeh has earned this award in the structure design category.

Hamid Eisazadeh

Left to right: *Thomas J. Lienert, 2019 AWS president; Andrew Payzant, instrument scientist in Oak Ridge National Laboratory (co-author); Paris A Cornwell, instrument systems scientific associate in Oak Ridge National Laboratory (co-author); Hamid Eisazadeh (first author); Suresh Babu, professor in Department of Mechanical, Aerospace, and Biomedical Engineering at the University of Tennesse*

New Book

Sandeep Kumar, professor in the Department of Civil and Environmental Engineering, has recently published a new book entitled, "Sub- and Supercritical Hydrothermal Technology: Industrial Applications." Offering a practical view of a variety of industrial applications and their challenges, Kumar's book aims to provide a deeper understanding of the application of sub- and supercritical fluids and their techno-economic viability.

Co-authored by Florin Barla, director of processing at Tyton BioSciences, the book covers a wide range of applications of hydrothermal processing that result in virtually zero waste, high energy efficiency, sustainable chemical processes, and minimal impact over the life cycle. These applications include processing of hazardous waste, bioproducts, coal, lipids, heavy oil, bitumen, and carbon materials. The use of hot-compressed water instead of different organic solvents, such as methanol, acetone, and hexane, is an environmentally benign, green and sustainable option that can aid in the design of chemical processes that support green chemistry and engineering.

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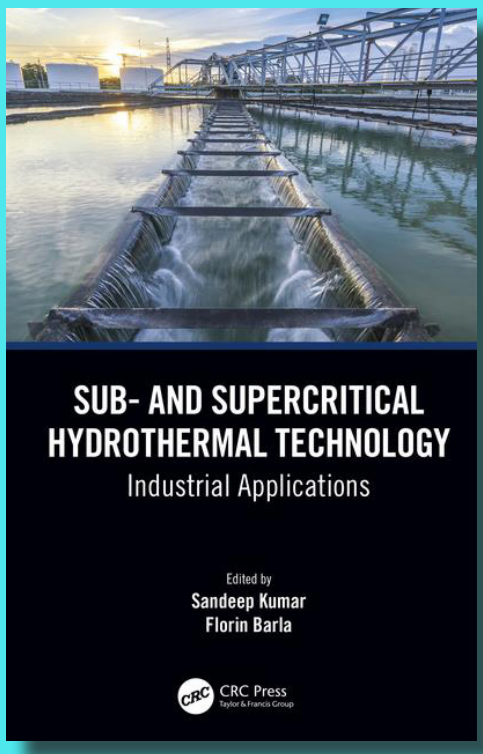

Sandeep Kumar

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