



NEWSLETTER



NOVEMBER 2025

UNIVERSITY OF WISCONSIN-MADISON

WEMPEC at ECCE

WEMPEC Students and Faculty attended the 2025 ECCE Conference in Philadelphia, PA. Presentations and publications can be found on our members-only publications page.



Professor Dan Ludois and PhD student Shiying Wang received the IEEE Transactions on Industry Applications Transportation Systems Committee 2nd Prize Paper Award for their paper, "A Capacitively-Coupled Single-Wire Power Tether for Aerial Platforms".

CONGRATULATIONS TO OUR POWER ENGINEERING AWARDEES

Graduates

- Sangin Bae
- Hardik Chhabra
- Ruben Gasparini
- Joseph Gorka
- Laura Homiller
- Pourya Javidi
- Ujjwal Kumar
- Angelina Lesniak
- Cameron Little
- Shalini Manna
- Aditya Rangarajan
- Albert Rhee
- Ashwin Shejwalkar
- Sahil Shingote
- Gabriel Twohig
- Shuaihu Wu
- Jingjie Wu
- Ethan Zenker
- Peng Zhang

Undergraduates

- Colton Dombrowski
- Garrett Gauger
- Sarah Gerovac
- Blake Helland
- Asma Kazi
- Natalie Leuty
- Julian Maldonado
- Alec Marshall
- Caden McDaniel
- Michael Plumridge
- Kendall Riddle
- Caleb Sanders
- Joshua Schooley
- Ian Waite

Alvarado Scholarship

- Naman Gupta
- Reema Ibrahim
- Rohan Susarla
- Bailey Tomsich
- James Wang



Congratulations, Professor Gupta!

Chirag Gupta, Affiliate Professor at WEMPEC, recently received the NSF Career Award for his research into ultra wide-band-gap semiconductors. He said he's most interested in the real-world applications of these devices in the marketplace. Read a feature about Gupta's research and recent breakthroughs below.



What challenge is your research trying to solve?

Silicon is the most commonly used material in electronics. 99% of electronics is silicon. But in power electronics applications, silicon is reaching its limits, and as a result new materials are being explored. After silicon came the second generation of materials, silicon carbide and gallium nitride, around the 2000s. A lot of these materials are now commercialized and people are using them day-in and day-out.

There is another generation of materials which we think is going to provide better performance, called ultra wide bandgap materials. The larger bandgap allows you to hold more voltage in the same space, and manipulate more power density. They are in very early stages. My career award is focused on developing these materials for power electronics applications.

What are the benefits of ultra wide band gap devices?

Compared to silicon, wide band gap materials allowed [devices] to go to higher frequencies, which reduced passive size and incurred fewer losses. Ultra-wide bandgap materials provide even more versatility, so you can design your system around the electronics and make it smaller and more efficient. Basically, it's just a level up kind of a product. No matter how you look at it, you can fit into different applications as you want to.

I really value WEMPEC's collaboration and the environment that it creates. Over the last five years, I have enjoyed countless conversations about how circuits influence devices and how devices influence materials. Now, I'm hearing about problems which I don't hear about if I stay in my world. This is a real strength, and I'm very excited to be a part of it.

