

Title: Gallium Nitride Power Electronics for Renewable Energy Systems

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The world deals day in and day out with electrical power conversion— trillions of adjustments are made every second to deliver electricity from our wall outlets to power any of our electrical/electronic devices. These are made possible by systems that do the converting –called 'Power Electronic Converters', conventionally built using silicon. On an average, these converters are only 90 percent energy-efficient and the rest is lost as heat, costing us billions every year. And with increasing power density and efficiency requirements along with the environmental pollution control trends of the 21st century, Si devices are failing to meet these challenging demands.

My research work aims to address this problem of electric power by exploring a better way of converting this 'power' using devices made of the novel material – 'Gallium Nitride' which are expected to jump-start the next generation of smaller, faster, denser, cheaper and hence, efficient power converters. Gallium Nitride (GaN) devices are now gaining momentum in the market with 600 V devices getting commercialized and industry keen to zero in on a high-volume application to drive the market. In this talk, I will introduce the GaN power electronics space, it's potential applications, review the applicability of these devices in the real world , and introduce how using GaN power electronics in renewable energy systems can help the move towards a greener world .

Biography

Nikita is a Doctoral Scholar in Electrical Engineering at the University of Cambridge. She is a scientist , academic, engineer and social tech entrepreneur. She did her masters in power electronics and bachelors in electronics & instrumentation engineering graduating with first rank and gold medals for both. Nikita is the co-founder of start-ups Wudi & Favalley & serves as the director of Innovation Disruption Cell, Probiz, mentor at Career Horn, research consultant at BrainAura, advisory board at Next Tech Lab & global ambassador at Queen Elizabeth Prize for Engineering. The recipient of 'Top 50 Women in Engineering', Developher Entrepreneur Award, Forbes and Hult Prize finalist with other numerous awards & recognition to her credit, she is a regular invited speaker at STEM outreach events and tech conferences. Her research interests are in the area of gallium nitride power electronics , machine learning for power electronics , artificial intelligence , renewable energy systems, bioengineering & organ-on-chip. She has published more than 25 papers in reputed journals and conferences and has been serving as an editorial board member of repute.

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