



ECE Speaker Series

Department of Electrical
and Computer Engineering

Dr. Jingyu Lin

*Linda Whitacre Endowed Chair and Horn Professor
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Hexagonal boron nitride: Epitaxial growth, optical properties, and exploration of active devices

As a member of the III-nitride wide bandgap semiconductor family, boron nitride has received much less attention in comparison with other nitride semiconductors. The stable phase of BN synthesized at any temperature under ambient pressure is hexagonal. Hexagonal boron nitride (h-BN or hBN) possesses extraordinary physical properties including wide bandgap ($E_g \sim 6.5$ eV), high temperature stability and corrosion resistance, and large optical absorption and thermal neutron capture cross section. In this talk, a brief overview of the synthesis of wafer-scale h-BN epilayers by MOCVD will be presented. It was shown that the unique layered (or 2D) structure of h-BN induces exceptionally high density of states and large exciton binding energy, which results in high optical absorption and emission intensity. It was demonstrated that by monitoring the impurity related emission peaks while varying the growth conditions, it is possible to obtain epilayers exhibiting pure free exciton emission.

September 26, 2016 at 10:00am in Egr Bldg 2, Rm W122

Jingyu Lin is the Linda F. Whitacre endowed chair and Horn distinguished professor of Electrical and Computer Engineering and co-director of the Nanophotonics Center at Texas Tech University. She has made pioneering contributions to the nano-scale epitaxial material growth and photonic device fabrication, fundamental understanding, and practical applications of III-nitride wide bandgap semiconductors. She is a co-inventor of inorganic semiconductor microLED (μ LED). The III-nitride photonic crystal LED architecture first report by her and her colleagues is now being recognized as one of the most prominent approaches to boost the efficiency of LEDs. Dr. Lin has published 375 scientific papers and holds 20 patents. Her publications have generated 14,000 citations with an h-index of 68. She earned her bachelor's degree at the State University of New York College at Oneonta and her Ph.D. from Syracuse University. Dr. Lin is a fellow of the American Physical Society (APS) as well as of the Optical Society of America (OSA).

Please contact Dr Wei-Chuan Shih (wshih@uh.edu) if you would like to meet with the speaker.

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