Kun Zhang

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Education

Northeastern University present
PhD in Electrical and Computer Engineering Boston, MA

Carnegie Mellon University 2023/05
Master of Science in Materials Science and Engineering Pittsburgh, PA

Virginia Tech 2020/05
Bachelor of Science in Materials Science and Engineering Blacksburg, VA

Research Experience

PLD (Pulsed Laser Deposition) Project: high-performance Ohmic contact structures 2022/05 – 2023/05
Research Assistant

- Investigated the high-performance Ohmic Contact structures on β-Ga2O3 Using n+ type β-Ga2O3 by PLD
- Fabricated CTLM devices and characterized microstructural and electrical properties by using AFM, SEM, and I-V measurements; and optimized the fabrication process to get high-performance contacts
- Concluded that Ti/Au is the most stable metal for ohmic contact with the n+ type β-Ga2O3 layer on account of its continuous/smooth morphology and low contact resistance

Ni/Au and Co/Au Schottky contacts on Sn-doped β-Ga2O3 substrates 2021/08 – 2022/05
Research Assistant

- Investigated profoundly the thermal stability of Ni/Au and Co/Au Schottky contacts on Sn-doped ($2\bar{0}1$) β-Ga2O3 substrates at 300 ℃ and 500 ℃ annealing series
- Characterized the electrical properties and microstructural contacts by SEM, TEM, AFM, and I-V/C-V measurements, and quantified changes in electrical properties of metal-semiconductor contacts as a function of annealing time and temperature
- Learned about how the annealing temperature affects the properties of Ni/Au and Co/Au Schottky contacts

Double-Side Cooled SiC MOSFET Power Modules with Sintered-Silver Interposers 2020/08 – 2021/05
Research Assistant

- Designed a double-side cooled SiC power module with sintered silver interposer for a 100 kW/L Traction Inverter
- Simulated the thermal and mechanical performance of power electronic modules on computer, characterizing thermal adhesion properties of epoxy resins for encapsulating, die-attach, and post attach for modules

Undergraduate Thesis: Field Grading Materials

- Designed and fabricated a polymer-ceramic composite material that is capable of functioning as a field-grading material used in high voltage power modules
- Learned about how the ratio of ceramic fillers to polymer matrix affects the field-grading behaviors including nonlinearity and switching field of the polymer composites

Skills

Programming Skills: Python, Matlab
Tech Skills: Ansys, Mathematica, Autodesk CAD, Hall effect Measurements, SEM, AFM, Micro and Nano Fabrication