

Rohith Soman

Research Engineer

Electrical Engineering

Bio

ACADEMIC APPOINTMENTS

- Research Engineer, Electrical Engineering

Publications

PUBLICATIONS

- **Negative capacitance overcomes Schottky-gate limits in GaN high-electron-mobility transistors.** *Science (New York, N.Y.)*
Khan, A. I., Kim, J. K., Sikder, U., Das, K., Rodriguez, T., Soman, R., Chowdhury, S., Salahuddin, S.
2025: eadx6955
- **Integration of top-side low-temperature diamond on AlGaIn/GaN RF HEMT for device-level cooling** *APPLIED PHYSICS LETTERS*
Soman, R., Malakoutian, M., Woo, K., Kim, J., Rodriguez, T., Martinez, R., DeJarld, M., Tahhan, M., Valliancourt, J., Chumbes, E. M., Laroche, J., Chowdhury, S.
2025; 126 (21)
- **Integration of 150 nm gate length N-polar GaN MIS-HEMT devices with all-around diamond for device-level cooling** *APPLIED PHYSICS EXPRESS*
Soman, R., Malakoutian, M., Kim, J., Akso, E., Hatui, N., Wurm, C., Mishra, U., Chowdhury, S.
2025; 18 (4)
- **Lossless Phonon Transition Through GaN-Diamond and Si-Diamond Interfaces** *ADVANCED ELECTRONIC MATERIALS*
Malakoutian, M., Woo, K., Rich, D., Mandia, R., Zheng, X., Kasperovich, A., Saraswat, D., Soman, R., Jo, Y., Pfeifer, T., Hwang, T., Aller, H., Kim, et al
2024
- **Cooling future system-on-chips with diamond inter-tiers** *CELL REPORTS PHYSICAL SCIENCE*
Malakoutian, M., Kasperovich, A., Rich, D., Woo, K., Perez, C., Soman, R., Saraswat, D., Kim, J., Noshin, M., Chen, M., Vaziri, S., Bao, X., Shih, et al
2023; 4 (12)
- **Development of 300-400 °C grown diamond for semiconductor devices thermal management** *MRS ADVANCES*
Malakoutian, M., Soman, R., Woo, K., Chowdhury, S.
2023
- **Growth and mobility characterization of N-polar AlGaIn channel high electron mobility transistors** *APPLIED PHYSICS LETTERS*
Noshin, M., Wen, X., Soman, R., Xu, X., Chowdhury, S.
2023; 123 (6)
- **Demonstration of N-Polar All-AlGaIn High Electron Mobility Transistors With 375 mA/mm Drive Current** *IEEE ELECTRON DEVICE LETTERS*
Noshin, M., Soman, R., Chowdhury, S.
2023; 44 (7): 1072-1075
- **Scaling Study on High-Current Density Low-Dispersion GaN Vertical FinFETs** *IEEE ELECTRON DEVICE LETTERS*
Jeong, S., Lee, K., Chun, J., Soman, R., Chowdhury, S.
2023; 44 (5): 841-844

- **Impact of Diamond Passivation on $f(T)$ and $f(\max)$ of mm-wave N-Polar GaN HEMTs** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Zhou, X., Malakoutian, M., Soman, R., Bian, Z., Martinez, R., Chowdhury, S.
2022
- **Low Thermal Budget Growth of Near-Isotropic Diamond Grains for Heat Spreading in Semiconductor Devices** *ADVANCED FUNCTIONAL MATERIALS*
Malakoutian, M., Zheng, X., Woo, K., Soman, R., Kasperovich, A., Pomeroy, J., Kuball, M., Chowdhury, S.
2022
- **Nanoporous GaN on p-type GaN: A Mg out-diffusion compensation layer for heavily Mg-doped p-type GaN.** *Nanotechnology*
Lee, K. J., Nakazato, Y., Chun, J., Wen, X., Meng, C., Soman, R., Noshin, M., Chowdhury, S.
2022
- **Vertical Ga₂O₃ MOSFET With Magnesium Diffused Current Blocking Layer** *IEEE ELECTRON DEVICE LETTERS*
Zeng, K., Soman, R., Bian, Z., Jeong, S., Chowdhury, S.
2022; 43 (9): 1527-1530
- **A study on MOCVD growth window for high quality N-polar GaN for vertical device applications** *SEMICONDUCTOR SCIENCE AND TECHNOLOGY*
Soman, R., Noshin, M., Chowdhury, S.
2022; 37 (9)
- **A systematic study of the regrown interface impurities in unintentionally doped Ga-polar c-plane GaN and methods to reduce the same** *SEMICONDUCTOR SCIENCE AND TECHNOLOGY*
Noshin, M., Soman, R., Xu, X., Chowdhury, S.
2022; 37 (7)