



Boran Kumral

Postdoctoral Scholar, Electrical Engineering

Bio

BIO

Boran Kumral is a postdoctoral scholar in Prof. Eric Pop's group in the Department of Electrical Engineering, where he focuses on nanoelectronics based on 2D semiconductors. He holds a Ph.D. in Mechanical Engineering from the University of Toronto (2025), where he studied defect and strain engineering of 2D materials as an FRQ Doctoral Scholar, and a B.Eng. in Mechanical Engineering from McGill University (2018). He spent over a year working in industry between his undergraduate and graduate studies.

PROFESSIONAL EDUCATION

- Ph.D., University of Toronto (2025)
- B.Eng., McGill University (2018)

STANFORD ADVISORS

- Eric Pop, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: https://scholar.google.com/citations?user=_JNVTEQAAAAJ&hl=en
- Pop Lab Website: <https://poplab.stanford.edu/>
- LinkedIn: <https://www.linkedin.com/in/borankumral/>

Publications

PUBLICATIONS

- **Substoichiometric Atomically Thin Gallium Oxide as a Defect-Tunable Multifunctional Oxide** *ACS APPLIED ELECTRONIC MATERIALS*
Akibul Islam, M., Jeong, U., Barri, N., Jannat, A., Guo, X., Kumral, B., Zavabeti, A., Hong, S., Filleter, T.
2026; 8 (15): 6324-6334
- **Strain-Induced Electrical Conductivity in Diamond Nanowires** *NANO LETTERS*
Pieshkov, T. S., Barri, N., Zhou, Y., Shin, B., Islam, M., Kumral, B., Serles, P., Steinbach, D., Murukeshan, J., Biswas, A., Li, C., Lou, J., Han, et al
2026; 26 (14): 4906-4912
- **Quasi-Static to Supersonic Energy Absorption of Nanoarchitected Tubulanes and Schwarzites** *ADVANCED FUNCTIONAL MATERIALS*
Serles, P., Maguire, A., Butruille, T., Lem, J., Yang, S., Demingos, P., Choukir, S., Hache, M., Kumral, B., Jia, K., Jia, C., Zou, Y., Singh, et al
2026; 36 (39)
- **Direct evidence and atomic-scale mechanisms of reduced dislocation mobility in ZnS under illumination** *SCRIPTA MATERIALIA*
Li, M., Luo, K., Ma, X., Kumral, B., Gao, P., Filleter, T., An, Q., Zou, Y.
2026; 271

- **Electrostatically Enhanced Buried Interface Binding of Self-Assembled Monolayers for Efficient And Stable Inverted Perovskite Solar Cells** *ADVANCED MATERIALS*
Huang, C., Yang, Y., Liu, C., Chen, H., Chaudhuri, S., Jeon, W., Li, M., Rolston, N., Bati, A. S. R., Gilley, I. W., Kumral, B., Serles, P., Filleter, et al
2025; 37 (43)
- **Mechanically reliable and electronically uniform monolayer MoS₂ by passivation and defect healing** *NATURE COMMUNICATIONS*
Kumral, B., Barri, N., Demingos, P. G., Adabasi, G., Grishko, A., Wang, G., Kawase, J., Onodera, M., Machida, T., Baykara, M. Z., Singh, C. V., Filleter, T.
2025; 16 (1)
- **Nanoscale fletching of liquid-like polydimethylsiloxane with single perfluorocarbons enables sustainable oil-repellency** *NATURE COMMUNICATIONS*
Au, S., Gauthier, J. R., Kumral, B., Filleter, T., Mabury, S., Golovin, K.
2025; 16 (1)
- **Leveraging self-passivation of quantum dots <i>via</i> nitrogen-doping for multifunctional biopolymer nanocomposites** *JOURNAL OF MATERIALS CHEMISTRY A*
Tuccitto, A. V., Aguiar, R., Sansone, N. D., Chehrehsez, Y., Kumral, B., Serles, P., Filleter, T., Park, C. B., Lee, P. C.
2025; 13 (11): 7973-7988
- **Ultrahigh Specific Strength by Bayesian Optimization of Carbon Nanolattices** *ADVANCED MATERIALS*
Serles, P., Yeo, J., Hache, M., Demingos, P., Kong, J., Kiefer, P., Dhulipala, S., Kumral, B., Jia, K., Yang, S., Feng, T., Jia, C., Ajayan, et al
2025; 37 (14)
- **Multi-Functional Silole Hole Transport Layer for Efficient and Stable Lead-Tin Perovskite and Tandem Solar Cells** *ADVANCED MATERIALS*
Cai, Y., Maxwell, A., Li, C., Jung, E., Zeng, L., Kumral, B., Serles, P., Tan, Z., Yu, R., Boccia, S., Chen, M., Jiang, C., Chen, et al
2024; 36 (46)
- **Strain Driven Electrical Bandgap Tuning of Atomically Thin WSe₂** *ADVANCED ELECTRONIC MATERIALS*
Islam, M., Nicholson, E., Barri, N., Onodera, M., Starkov, D., Serles, P., He, S., Kumral, B., Zavabeti, A., Shahsa, H., Cui, T., Wang, G., Machida, et al
2024
- **Cyclic Wear Reliability of 2D Monolayers** *ACS APPLIED MATERIALS & INTERFACES*
Barri, N., Rastogi, A., Islam, M., Kumral, B., Demingos, P., Onodera, M., Machida, T., Singh, C., Filleter, T.
2024; 16 (21): 27979-27987
- **Carbon film produced from microwave-driven methane pyrolysis** *CARBON TRENDS*
Dadsetan, M., Latham, K. G., Kumral, B., Khan, M., Scott, M., Mitra, T., Naseri, A., Manzoor, S., Bobicki, E. R., Filleter, T., Titirici, M., Thomson, M. J.
2023; 12
- **Fatigue Behavior of Polymer Encapsulated Graphene to Mitigate Interfacial Fatigue Damage** *ADVANCED ENGINEERING MATERIALS*
Islam, M., Kumral, B., Wang, G., Cui, T., Hou, Y., Pan, P., Liu, X., Filleter, T.
2023
- **Peltier cooling for the reduction of carbon contamination in scanning electron microscopy** *MICRON*
San Gabriel, M., Yu, D., Mekuz, I., Kumral, B., Nikbin, E., Filleter, T., Howe, J. Y.
2023; 172
- **Defect Engineering of Graphene for Dynamic Reliability.** *Small (Weinheim an der Bergstrasse, Germany)*
Kumral, B., Demingos, P. G., Cui, T., Serles, P., Barri, N., Singh, C. V., Filleter, T.
2023: e2302145
- **Exfoliation mechanisms of 2D materials and their applications** *APPLIED PHYSICS REVIEWS*
Islam, M., Serles, P., Kumral, B., Demingos, P., Qureshi, T., Meiyazhagan, A., Puthirath, A. B., Abdullah, M., Faysal, S., Ajayan, P. M., Panesar, D., Singh, C., Filleter, et al
2022; 9 (4)
- **Mechanical reliability of monolayer MoS₂ and WSe₂** *MATTER*
Cui, T., Mukherjee, S., Onodera, M., Wang, G., Kumral, B., Islam, A., Shayegannia, M., Krishnan, G., Barri, N., Serles, P., Zhang, X., Sassi, L. M., Tam, et al

