BIOGRAPHICAL SKETCH

NAME: Christopher M. Rouleau

POSITION TITLE & INSTITUTION: Research Staff Member, Center for Nanophase Materials Sciences

**EDUCATION AND TRAINING**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| INSTITUTION | LOCATION | MAJOR/AREA OF STUDY | DEGREE | YEAR |
| University of Florida  University of Florida  Western New England University | Gainesville, FL  Gainesville, FL  Springfield, MA | Materials Science & Engineering  Materials Science & Engineering w/minor in Electrical Engineering  Electrical Engineering | Ph.D.  M.S  B. S. | 1994  1991  1988 |

**RESEARCH AND PROFESSIONAL EXPERIENCE**

|  |  |
| --- | --- |
| **From – To** | **Position Title, Organization and Location** |
| 1998-present  1996-1998  1994-1996  1993 | Research Staff Member, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory  Wigner Fellow, Materials Sciences & Technology Division, Oak Ridge National Laboratory  Postdoctoral Research Assistant, Solid State Division, Oak Ridge National Laboratory  Visiting Scientist, 3M Company, St. Paul, MN |

PUBLICATIONS

1. “Two‐Dimensional Palladium Diselenide with Strong In‐Plane Optical Anisotropy and High Mobility Grown by Chemical Vapor Deposition,” Yiyi Gu, Hui Cai, Jichen Dong, Yiling Yu, Anna N Hoffman, Chenze Liu, Akinola D Oyedele, Yu‐Chuan Lin, Zhuozhi Ge, Alexander A Puretzky, Gerd Duscher, Matthew F Chisholm, Philip D Rack, Christopher M Rouleau, Zheng Gai, Xiangmin Meng, Feng Ding, David B Geohegan, Kai Xiao, Advanced Materials **32**, 2070152 (2020).
2. “In situ laser reflectivity to monitor and control the nucleation and growth of atomically thin 2D materials,” Alexander A Puretzky, Yu-Chuan Lin, Chenze Liu, Alex M Strasser, Yiling Yu, Stela Canulescu, Christopher M Rouleau, Kai Xiao, Gerd Duscher, and David B Geohegan, 2D Materials **7**, 025048 (2020).
3. “Low Energy Implantation into Transition-Metal Dichalcogenide Monolayers to Form Janus Structures,” Yu-Chuan Lin, Chenze Liu, Yiling Yu, Eva Zarkadoula, Mina Yoon, Alexander A Puretzky, Liangbo Liang, Xiangru Kong, Yiyi Gu, Alex Strasser, Harry M Meyer III, Matthias Lorenz, Matthew F Chisholm, Ilia N Ivanov, Christopher M Rouleau, Gerd Duscher, Kai Xiao, and David B Geohegan, ACS Nano **14**, 3896 (2020).
4. “2D/2D heterojunction of Ti3C2/g-C3N4 nanosheets for enhanced photocatalytic hydrogen evolution,” Tongming Su, Zachary D Hood, Michael Naguib, Lei Bai, Si Luo, Christopher M Rouleau, Ilia N Ivanov, Hongbing Ji, Zuzeng Qin, Zili Wu, Nanoscale **11**, 8137 (2019).
5. “Isotope-Engineering the Thermal Conductivity of Two-Dimensional MoS2,” Xufan Li, Jingjie Zhang, Alexander A Puretzky, Anthony Yoshimura, Xiahan Sang, Qiannan Cui, Yuanyuan Li, Liangbo Liang, Avik W Ghosh, Hui Zhao, Raymond R Unocic, Vincent Meunier, Christopher M Rouleau, Bobby G Sumpter, David B Geohegan, Kai Xiao, ACS Nano **13**, 2481 (2019).
6. “Monolayer Ti3C2Tx as an Effective Co-catalyst for Enhanced Photocatalytic Hydrogen Production over TiO2,” Tongming Su, Zachary D Hood, Michael Naguib, Lei Bai, Si Luo, Christopher M Rouleau, Ilia N Ivanov, Hongbing Ji, Zuzeng Qin, Zili Wu, ACS Applied Energy Materials **2**, 4640 (2019).
7. “Strain tolerance of two-dimensional crystal growth on curved surfaces,” Kai Wang, Alexander A Puretzky, Zhili Hu, Bernadeta R Srijanto, Xufan Li, Nitant Gupta, Henry Yu, Mengkun Tian, Masoud Mahjouri-Samani, Xiang Gao, Akinola Oyedele, Christopher M Rouleau, Gyula Eres, Boris I Yakobson, Mina Yoon, Kai Xiao, David B Geohegan, Science Advances **5**, 1 (2019).
8. “Defect-Mediated Phase Transformation in Anisotropic Two-Dimensional PdSe2 Crystals for Seamless Electrical Contacts,” Akinola D Oyedele, Shize Yang, Tianli Feng, Amanda V Haglund, Yiyi Gu, Alexander A Puretzky, Dayrl Briggs, Christopher M Rouleau, Matthew F Chisholm, Raymond R Unocic, David Mandrus, ST Pantelides, DB Geohegan, K Xiao, Journal of the American Chemical Society **141**, 8928 (2019).
9. “The growth and assembly of organic molecules and inorganic 2D materials on graphene for van der Waals heterostructures,” Akinola D Oyedele, Christopher M Rouleau, David B Geohegan, Kai Xiao, Carbon **131**, 246 (2018).
10. “In situ edge engineering in two-dimensional transition metal dichalcogenides,” Xiahan Sang, Xufan Li, Wen Zhao, Jichen Dong, Christopher M Rouleau, David B Geohegan, Feng Ding, Kai Xiao, Raymond R Unocic, Nature Communications **9**, 2051 (2018).

**SYNERGISTIC ACTIVITIES**:

1. 2020 - ORNL award for Outstanding Scholarly Output for “Low Energy Implantation into Transition-Metal Dichalcogenide Monolayers to form Janus Structures,” ACS Nano **14**, 3896 (2020).
2. 2020 - CNMS Award for Outstanding S&T Accomplishment for “Pioneering research on understanding 2D MXene-based photocatalysts for solar energy conversion”
3. 2017 - CNMS Distinguished Scientific Paper Award for “PdSe2: Pentagonal Two-Dimensional Layers with High Air Stability for Electronics,” J. Am. Chem. Soc. **139**, 14090 (2017).
4. 2014 - CNMS Distinguished Scientific Paper Award for “The isotopic effects of deuteration on optoelectronic properties of conducting polymers,” Nat. Commun. **5**, 3180 (2014).
5. 2011 – invited lecture on “Nanoparticle Synthesis and Transport Dynamics Resulting from Through Thin Film Femtosecond Laser Ablation,” C. M. Rouleau, J. D. Readle, A. A. Puretzky, D. B. Geohegan, and K. L. More, 11th International Conference on Laser Ablation (COLA 2011), Playa del Carmen, Mexico, Nov. 13-19, 2011.

**IDENTIFICATION OF POTENTIAL CONFLICTS OF INTEREST OR BIAS IN SELECTION OF REVIEWERS**

**Collaborators and Co-editors**:

F. Alamgir (Georgia Institute of Technology), E. Arenholz (Cornell University), Y. Bar-Cohen (Jet Propulsion Laboratory), N. Bassiri-Gharb (Georgia Institute of Technology), C. Bell (Georgia Institute of Technology), E. Benda (Argonne National Laboratory), S. Bennett (The U.S. Naval Research Laboratory), S. Bi (University of Science and Technology-HUST), W. Boldman (University of Tennessee), L. Bovo (University College London), S. Bramwell (University College London), D. Bridges (University of Tennessee), S. Canulescu (Technical University of Denmark), Y. Cao (Georgia Institute of Technology), F. Ceballos (University of Kansas), S. Cheng (Brookhaven National Laboratory), J. Cheng (Composite Solutions and Digital Manufacturing), I-T. Chiu (University of California-Davis), J. Chopdekar (Lawrence Berkeley National Laboratory), C. Cress (The U.S. Naval Research Laboratory), N. Cross (University of Tennessee-Knoxville), E. Crumlin (Lawrence Berkeley National Laboratory), Q. Cui (University of Kansas), P. Di Stefano (Queen’s University), J. Ding (Georgia Institute of Technology), F. Ding (Institute for Basic Science), J. Dong (Institute for Basic Science), G. Duscher (University of Tennessee-Knoxville), G. Feng (University of Science and Technology-HUST), D. Fong (Argonne National Laboratory), J. Frantti (Finnish Research and Engineering), Y. Fujioka (Finnish Research and Engineering), A. Ghosh (University of Virginia), A. Ghosh (University of Virginia), K. Goetz (University of Tennessee), Y. Gu (University of Chinese Academy of Sciences), G. Gu (Brookhaven National Laboratory), N. Gupta (Rice University),

A. Haglund (University of Tennessee), D. Hamm (University of Tennessee), A. Herklotz (Martin-Luther-University Halle-Wittenberg), W. Hong (Massachusetts Institute of Technology), Z. Hu (Nanjing University of Aeronautics and Astronautics), J. Huang (University of Nebraska-Lincoln), J. Hwang (Massachusetts Institute of Technology), J. Hongbing (Guangxi University), J. Kacher (Georgia Institute of Technology), A. Kane (University of California-Davis), S. Kang ( (Chonbuk National University), J. Key (Georgia Institute of Technology), P. Lechner (MPG Semiconductor Laboratory), D-C. Lee (Georgia Institute of Technology), D. Lee (Massachusetts Institute of Technology), Q. Li (Brookhaven National Laboratory), Y. Li (University of Kansas), C. Liu (University of Tennessee), Z. Liu (Nanyang Technological University), E. Lukosi (University of Tennessee-Knoxville), P. Lyub (University of California-Davis), Y. Ma (University of Tennessee), M. Mahjouri-Samani (Auburn University), M. Mancuso (Max-Planck-Institut für Physik), I. Mazin (The U.S. Naval Research Laboratory), A. Mehta (SLAC National Accelerator Laboratory), C. Melcher (University of Tennessee), X. Meng (University of Chinese Academy of Sciences), V. Meunier (Rensselaer Polytechnic Institute), M. Naguib ( Tulane University), A. N'Diaye (Lawrence Berkeley National Laboratory), J. Ninkovic (MPG Semiconductor Laboratory), O. Peter (Iowa State University), A. Oyedele (University of Tennessee-Knoxville), F. Petricca (Max-Planck-Institut für Physik), D. Prabhakaran, (University of Oxford), P. Pudasaini, (University of Tennessee), Z. Qin (Guangxi University), P. Rack (University of Tennessee), R. Rao (Massachusetts Institute of Technology), X. Renshaw-Wang (Nanyang Technological University), R. Roth (Martin Luther University of Halle-Wittenberg), S. Rus (National Institute for Research and Development in Electrochemistry and Condensed Matter), K. Sasaki (Brookhaven National Laboratory), M. Scheurer (Harvard University), Y. Shao‑Horn (Massachusetts Institute of Technology), C. Smith (University of Tennessee), P. Squillari (Queen’s University), L. Stand, (University of Tennessee), E. Stavitski (Brookhaven National Laboratory), K. Stoerzinger (Oregon State University), A. Strasser (Texas A&M University), M. Stukel (Queen’s University), T. Su (Guangxi University), Y. Takamura (Yayoi, University of California-Davis), M. Tian (University of Tennessee), J Tischler (Argonne National Laboratory), C. Vaswani (Iowa State University), J. Wang (Iowa State University), H. Wang (State University of New York, Binghamton), M. Williams (Clark Atlanta University),

Y. Xie (Georgia Institute of Technology), B. Yakobson (Boris, Rice University), X. Yang (Iowa State University), B. Yang (Hunan University), I. Yavin (McMaster University), A. Yoshimura (Rensselaer Polytechnic Institute), H. Yu (Rice University), Y. Yu (Lawrence Berkeley National Laboratory), P. Yu (Nanyang Technological University), C. Zhang (University of Tennessee ), Z. Zhang (Argonne National Laboratory), Z Zhang (University of Tennessee), W. Zhao (University of Science and Technology-HUST), H. Zhao (University of Kansas), W. Zhao (Institute for Basic Science-IBS), S. Zhu (Georgia Institute of Technology), Y. Zhu (Brookhaven National Laboratory)

**Graduate and Postdoctoral Advisors and Advisees**:

Ph.D. Advisor: R. M. Park, University of Florida (retired)

Postdoctoral Advisor: D. H. Lowndes, Oak Ridge National Laboratory (retired)

Total Graduate Students Advised: 0

Total Postdoctoral Scholars Advised: 0