James Hone

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Professional Preparation

Yale University, New Haven CT	Physics	B.S.	1990
University of California, Berkeley	Physics	Ph.D.	1998
Thesis: 'Studies of one-dimensional metals: AC_{60} and carbon nanotubes"			
University of Pennsylvania, Philadelphia PA	Physics	Postdoctoral	2000
California Institute of Technology, Pasadena CA	Physics	Postdoctoral	2002

Appointments

2015-	Wang Fong-Jen Professor of Mechanical Engineering, Columbia University, New York NY
2012-2014	Professor of Mechanical Engineering, Columbia University.
2014-	Chair Professor (honorary), Samsung Advanced Institute of Nanotechnology, Sungkyungkwan University (Korea)
2007- 2012	Associate Professor of Mechanical Engineering, Columbia University.
2003-2007	Assistant Professor of Mechanical Engineering, Columbia University.
2000-2002	Millikan Fellow in Experimental Condensed Matter Physics, California Institute of Technology, Pasadena CA
1990-1992	High School Teacher, New York Public High Schools, New York, NY

Awards and Recognitions:

- Millikan Fellowship in Condensed Matter Physics, Caltech (2000)
- Society of Columbia Graduates Great Teacher Award (2014).
- Distinguished Faculty Teaching Award, Columbia Engineering Alumni Association (2015).
- Clarivate Highly Cited Researcher in the field of Physics (2014-2024)
- Clarivate Highly Cited Researcher in the field of Materials Science (2018-2024)
- Fellow, American Physical Society (2023)
- American Physical Society James P. McGroddy Prize for New Materials (2023)

Synergistic Activities:

- Chair, Department of Mechanical Engineering, Columbia University (2021-2024)
- Vice Chair, Department of Mechanical Engineering, Columbia University (2024)
- Director, Columbia University Materials Research Science and Engineering Center (MRSEC) (2014-2021)
- Associate Director, Columbia MRSEC (2021-2024)
- Gordon Research Conference on 2D materials (Vice Chair, 2016; Chair, 2018)
- Co-organizer, Graphene for US conference (2018, 2019, 2020, 2022)

Selected Publications

Citation information (Google Scholar): Total citations 165,000 h-index 150 (April 2025)
https://scholar.google.com/citations?user=mQcg8HoAAAAJ&hl=en

1 Pack, J., Guo, Y. J., Liu, Z. Y., Jessen, B. S., Holtzman, L., Liu, S., Cothrine, M., Watanabe, K., Taniguchi, T., Mandrus, D. G., Barmak, K., Hone, J. & Dean, C. R. "Charge-transfer contacts for the measurement of correlated states in high-mobility WSe2". *Nature Nanotechnology* **19,** 948-954, (2024).

2 Bhattacharya, S., Ettela, A., Haydak, J., Hobson, C. M., Stern, A., Yoo, M., Chew, T. L., Gusella, G. L., Gallagher, E. J., Hone, J. C. & Azeloglu, E. U. "A high-throughput microfabricated platform for rapid quantification of metastatic potential". *Science Advances* **10**, (2024).

3 Amontree, J., Yan, X., DiMarco, C. S., Levesque, P. L., Adel, T., Pack, J., Holbrook, M., Cupo, C., Wang, Z., Sun, D., Biacchi, A. J., Wilson-Stokes, C. E., Watanabe, K., Taniguchi, T., Dean, C. R., Hight Walker, A. R., Barmak, K., Martel, R. & Hone, J. "Reproducible graphene synthesis by oxygen-free chemical vapour deposition". *Nature* **630,** 636-642, (2024).

4 Liu, S., Liu, Y., Holtzman, L., Li, B., Holbrook, M., Pack, J., Taniguchi, T., Watanabe, K., Dean, C. R., Pasupathy, A. N., Barmak, K., Rhodes, D. A. & Hone, J. "Two-Step Flux Synthesis of Ultrapure Transition-Metal Dichalcogenides". *ACS Nano* **17,** 16587-16596, (2023).

5 Kim, B. S. Y., Sternbach, A. J., Choi, M. S., Sun, Z. Y., Ruta, F. L., Shao, Y. M., McLeod, A. S., Xiong, L., Dong, Y. A., Chung, T. S., Rajendran, A., Liu, S., Nipane, A., Chae, S. H., Zangiabadi, A., Xu, X. D., Millis, A. J., Schuck, P. J., Dean, C. R., Hone, J. C. & Basov, D. N. "Ambipolar charge-transfer graphene plasmonic cavities". *Nature Materials* **22,** 838-843, (2023).

6 Kapfer, M., Jessen, B. S., Eisele, M. E., Fu, M., Danielsen, D. R., Darlington, T. P., Moore, S. L., Finney, N. R., Marchese, A., Hsieh, V., Majchrzak, P., Jiang, Z. H., Biswas, D., Dudin, P., Avila, J., Watanabe, K., Taniguchi, T., Ulstrup, S., Boggild, P., Schuck, P. J., Basov, D. N., Hone, J. & Dean, C. R. "Programming twist angle and strain profiles in 2D materials". *Science* **381,** 677-681, (2023).

7 Yin, J. B., Tan, C., Barcons-Ruiz, D., Torre, I., Watanabe, K., Taniguchi, T., Song, J. C. W., Hone, J. & Koppens, F. H. L. "Tunable and giant valley-selective Hall effect in gapped bilayer graphene". *Science* **375,** 1398-1402, (2022).

8 Tan, C., Ho, D. Y. H., Wang, L., Li, J. I. A., Yudhistira, I., Rhodes, D. A., Taniguchi, T., Watanabe, K., Shepard, K., McEuen, P. L., Dean, C. R., Adam, S. & Hone, J. "Dissipation-enabled hydrodynamic conductivity in a tunable bandgap semiconductor". *Science Advances* **8,** abi8481 eabi8481, (2022).

9 Liu, F., Wu, W., Bai, Y., Chae, S. H., Li, Q., Wang, J., Hone, J. & Zhu, X.-Y. "Disassembling 2D van der Waals crystals into macroscopic monolayers and reassembling into artificial lattices". *Science* **367,** 903-906, (2020).

10 Datta, I., Chae, S. H., Bhatt, G. R., Tadayon, M. A., Li, B. C., Yu, Y. L., Park, C., Park, J., Cao, L. Y., Basov, D. N., Hone, J. & Lipson, M. "Low-loss composite photonic platform based on 2D semiconductor monolayers". *Nature Photonics* **14,** 256-262, (2020).

11 Rhodes, D., Chae, S. H., Ribeiro-Palau, R. & Hone, J. "Disorder in van der Waals heterostructures of 2D materials". *Nature materials* **18,** 541-549, (2019).

12 Ribeiro-Palau, R., Zhang, C., Watanabe, K., Taniguchi, T., Hone, J. & Dean, C. R. "Twistable electronics with dynamically rotatable heterostructures". *Science* **361,** 690-693, (2018).

13 Ni, G., McLeod, d. A., Sun, Z., Wang, L., Xiong, L., Post, K., Sunku, S., Jiang, B.-Y., Hone, J. & Dean, C. R. "Fundamental limits to graphene plasmonics". *Nature* **557,** 530-533, (2018).

14 Wolfenson, H., Meacci, G., Liu, S., Stachowiak, M. R., Iskratsch, T., Ghassemi, S., Roca-Cusachs, P., O'Shaughnessy, B., Hone, J. & Sheetz, M. P. "Tropomyosin controls sarcomere-like contractions for rigidity sensing and suppressing growth on soft matrices". *Nature cell biology* **18,** 33-42, (2016).

15 Chen, C., Deshpande, V. V., Koshino, M., Lee, S., Gondarenko, A., MacDonald, A. H., Kim, P. & Hone, J. "Modulation of mechanical resonance by chemical potential oscillation in graphene". *Nature Physics* **12,** 240-244, (2016).

16 Wang, L., Gao, Y., Wen, B., Han, Z., Taniguchi, T., Watanabe, K., Koshino, M., Hone, J. & Dean, C. R. "Evidence for a fractional fractal quantum Hall effect in graphene superlattices". *Science* **350,** 1231-1234, (2015).

17 Wu, W., Wang, L., Li, Y., Zhang, F., Lin, L., Niu, S., Chenet, D., Zhang, X., Hao, Y., Heinz, T. F., Hone, J. & Wang, Z. L. "Piezoelectricity of single-atomic-layer MoS2 for energy conversion and piezotronics". *Nature* **514,** 470-474, (2014).

18 Wang, L., Meric, I., Huang, P. Y., Gao, Q., Gao, Y., Tran, H., Taniguchi, T., Watanabe, K., Campos, L. M., Muller, D. A., Guo, J., Kim, P., Hone, J., Shepard, K. L. & Dean, C. R. "One-dimensional electrical contact to a two-dimensional material". *Science* **342,** 614-617, (2013).

19 Lee, G.-H., Cooper, R. C., An, S. J., Lee, S., Van Der Zande, A., Petrone, N., Hammerberg, A. G., Lee, C., Crawford, B., Oliver, W., Kysar, J. W. & Hone, J. C. "High-strength chemical-vapor–deposited graphene and grain boundaries". *science* **340,** 1073-1076, (2013).

20 Dean, C. R., Wang, L., Maher, P., Forsythe, C., Ghahari, F., Gao, Y., Katoch, J., Ishigami, M., Moon, P., Koshino, M., Taniguchi, T., Watanabe, K., Shepard, K. L., Hone, J. & Kim, P. "Hofstadter's butterfly and the fractal quantum Hall effect in moiré superlattices". *Nature* **497,** 598-602, (2013).

21 Chen, C., Lee, S., Deshpande, V. V., Lee, G.-H., Lekas, M., Shepard, K. & Hone, J. "Graphene mechanical oscillators with tunable frequency". *Nature nanotechnology* **8,** 923-927, (2013).

22 Dean, C. R., Young, A. F., Meric, I., Lee, C., Wang, L., Sorgenfrei, S., Watanabe, K., Taniguchi, T., Kim, P., Shepard, K. L. & Hone, J. C. "Boron nitride substrates for high-quality graphene electronics". *Nature Nanotechnology* **5,** 722-726, (2010).

23 Lee, C., Wei, X., Kysar, J. W. & Hone, J. "Measurement of the elastic properties and intrinsic strength of monolayer graphene". *Science* **321,** 385-388, (2008).

24 Sfeir, M. Y., Beetz, T., Wang, F., Huang, L., Huang, X. H., Huang, M., Hone, J., O'Brien, S., Misewich, J., Heinz, T. F., Wu, L., Zhu, Y. & Brus, L. E. "Optical spectroscopy of individual single-walled carbon nanotubes of defined chiral structure". *Science* **312,** 554-556, (2006).

25 Sfeir, M. Y., Wang, F., Huang, L., Chuang, C.-C., Hone, J., O'brien, S. P., Heinz, T. F. & Brus, L. E. "Probing electronic transitions in individual carbon nanotubes by Rayleigh scattering". *Science* **306,** 1540-1543, (2004).