James Hone
Department of Mechanical Engineering
Columbia University, New York, NY 10027
jh2228@columbia.edu

Professional Preparation

Yale University, New Haven CT	Physics	B.S.	1990
University of California, Berkeley			
Physics	Ph.D.		1998
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, New York NY
2007- 2012	Associate Professor of Mechanical Engineering, Columbia University, New York NY
2003-2007	Assistant Professor of Mechanical Engineering, Columbia University, New York, NY
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: Millikan Fellowship in Experimental Condensed Matter Physics, Caltech (2000); Society of Columbia Graduates Great Teacher Award (2014); Distinguished Faculty Teaching Award, Columbia Engineering Alumni Association (2015).

Graduate and Postdoctoral Advisor

A. Zettl (UC Berkeley); A.T. Johnson (U. Penn); Michael Roukes (Caltech)

Former Graduate Advisees:

Ghidewon Arefe (AAAS Fellow); Xu Cui; Fan Zhang (Nanjing Univ.); Junqiang Hu; Mufeng Hu; Demi Ajayi (Columbia CTV); Sunwoo Lee (Cornell); Sungjoo An; Lei Wang (Cornell); Yuanda Gao (Intel); Daniel Chenet (Becton-Dickinson); Changyao Chen (Argonne Nat. Lab); Xian Zhang (SUNY Buffalo); Yuyao Shan; Nicholas Petrone (Neovel Inc); Adam Hurst (SpaceX); Zhengyi Zhang (Sandisk); Shuaimin Liu; Anurag Mathur (UC Berkeley); Robert Caldwell (Intel); Justin Abramson (Pall Corp.); Mingyuan Huang (Xian Jiaotong Univ.); Bhupesh Chandra (IBM).

Former Postdoctoral advisees:

Amit Ron, Younghun Jung (Samsung), Jia Li (Brown), Young Duck Kim (Kyung Hee Univ.); Yufeng Hao (Nanjing Univ.); Cory Dean (Columbia); Arend van der Zande (UIUC); Alexander Gondarenko; Gwan-Hyoung Lee (Yonsei Univ, Korea); Changgu Lee (SKKU, Korea); Vikram Deshpande (Univ. Utah); Matteo Palma (St. Mary's College, London UK); Seokwoo Jeon (KAIST, Korea); Jessika Trancik (MIT); Sami Rosenblatt (IBM); Seong Chan Jun (Yonsei Univ., Korea); Oksana cherniavskaya (Goldman-Sachs); XM Henry Huang (Nantero, Inc.)

Selected Publications: Full list of publications and citation metrics available here: **https://scholar.google.com/citations?user=mQcg8HoAAAAJ&hl=en**

1 Sie, E. J., Nyby, C. M., Pemmaraju, C. D., Park, S. J., Shen, X. Z., Yang, J., Hoffmann, M. C., Ofori-Okai, B. K., Li, R. K., Reid, A. H., Weathersby, S., Mannebach, E., Finney, N., Rhodes, D., Chenet, D., Antony, A., Balicas, L., Hone, J., Devereaux, T. P., Heinz, T. F., Wang, X. J. & Lindenberg, A. M. "An ultrafast symmetry switch in a Weyl semimetal". *Nature* **565,** 61, (2019).

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

3 Ni, G. X., McLeod, A. S., Sun, Z., Wang, L., Xiong, L., Post, K. W., Sunku, S. S., Jiang, B. Y., Hone, J., Dean, C. R., Fogler, M. M. & Basov, D. N. "Fundamental limits to graphene plasmonics". *Nature* **557,** 530, (2018).

4 Gustafsson, M. V., Yankowitz, M., Forsythe, C., Rhodes, D., Watanabe, K., Taniguchi, T., Hone, J., Zhu, X. Y. & Dean, C. R. "Ambipolar Landau levels and strong band-selective carrier interactions in monolayer WSe2". *Nature Materials* **17,** 411-+, (2018).

5 Zhang, X.-X., Cao, T., Lu, Z., Lin, Y.-C., Zhang, F., Wang, Y., Li, Z., Hone, J. C., Robinson, J. A., Smirnov, D., Louie, S. G. & Heinz, T. F. "Magnetic brightening and control of dark excitons in monolayer WSe2". *Nature Nanotechnology* **12,** 883-+, (2017).

6 Ron, A., Azeloglu, E. U., Calizo, R. C., Hu, M., Bhattacharya, S., Chen, Y., Jayaraman, G., Lee, S., Neves-Zaph, S. R., Li, H., Gordon, R. E., He, J. C., Hone, J. C. & Iyengar, R. "Cell shape information is transduced through tension-independent mechanisms". *Nature Communications* **8,** 2145, (2017).

7 Lundeberg, M. B., Gao, Y. D., Asgari, R., Tan, C., Van Duppen, B., Autore, M., Alonso-Gonzalez, P., Woessner, A., Watanabe, K., Taniguchi, T., Hillenbrand, R., Hone, J., Polini, M. & Koppens, F. H. L. "Tuning quantum nonlocal effects in graphene plasmonics". *Science* **357,** 187-190, (2017).

8 Li, J. I. A., Taniguchi, T., Watanabe, K., Hone, J. & Dean, C. R. "Excitonic superfluid phase in double bilayer graphene". *Nature Physics* **13,** 751-+, (2017).

9 Li, J. I. A., Tan, C., Chen, S., Zeng, Y., Taniguehi, T., Watanabe, K., Hone, J. & Dean, C. R. "Even-denominator fractional quantum Hall states in bilayer graphene". *Science* **358,** 648-651, (2017).

10 Ju, L., Wang, L., Cao, T., Taniguchi, T., Watanabe, K., Louie, S. G., Rana, F., Park, J., Hone, J., Wang, F. & McEuen, P. L. "Tunable excitons in bilayer graphene". *Science* **358,** 907-910, (2017).

11 Wolfenson, H., Meacci, G., Liu, S. M., 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,** 33-37, (2016).

12 Chen, C. Y., 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,** 240-245, (2016).

13 Woessner, A., Lundeberg, M. B., Gao, Y., Principi, A., Alonso-Gonzaolez, P., Carrega, M., Watanabe, K., Taniguchi, T., Vignale, G., Polini, M., Hone, J., Hillenbrand, R. & Koppens, F. H. L. "Highly confined low-loss plasmons in graphene-boron nitride heterostructures". *Nature Materials* **14,** 421-425, (2015).

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

15 van der Zande, A. M., Kunstrnann, J., Chernikov, A., Chenet, D. A., You, Y. M., Zhang, X. X., Huang, P. Y., Berkelbach, T. C., Wang, L., Zhang, F., Hybertsen, M. S., Muller, D. A., Reichman, D. R., Heinz, T. F. & Hone, J. C. "Tailoring the Electronic Structure in Bilayer Molybdenum Disulfide via Interlayer Twist". *Nano Letters* **14,** 3869-3875, (2014).

16 van der Zande, A. M., Huang, P. Y., Chenet, D. A., Berkelbach, T. C., You, Y. M., Lee, G. H., Heinz, T. F., Reichman, D. R., Muller, D. A. & Hone, J. "Grains and grain boundaries in highly crystalline monolayer molybdenum disulphide". *Nature Materials* **12,** 554, (2013).

17 Rangamani, P., Lipshtat, A., Azeloglu, E. U., Calizo, R. C., Hu, M. F., Ghassemi, S., Hone, J., Scarlata, S., Neves, S. R. & Iyengar, R. "Decoding Information in Cell Shape". *Cell* **154,** 1356-1369, (2013).

18 Lee, G. H., Cooper, R. C., An, S. J., Lee, S., van der Zande, A., Petrone, N., Hammerherg, A. G., Lee, C., Crawford, B., Oliver, W., Kysar, J. W. & Hone, J. "High-Strength Chemical-Vapor Deposited Graphene and Grain Boundaries". *Science* **340,** 1073-1076, (2013).

19 Gan, X. T., Shiue, R. J., Gao, Y. D., Meric, I., Heinz, T. F., Shepard, K., Hone, J., Assefa, S. & Englund, D. "Chip-integrated ultrafast graphene photodetector with high responsivity". *Nature Photonics* **7,** 883-887, (2013).

20 Ghassemi, S., Meacci, G., Liu, S., Gondarenko, A. A., Mathur, A., Roca-Cusachs, P., Sheetz, M. P. & Hone, J. "Cells test substrate rigidity by local contractions on submicrometer pillars". *P Natl Acad Sci USA* **109,** 5328-5333, (2012).

21 Dean, C. R., Young, A. F., Cadden-Zimansky, P., Wang, L., Ren, H., Watanabe, K., Taniguchi, T., Kim, P., Hone, J. & Shepard, K. L. "Multicomponent fractional quantum Hall effect in graphene". *Nature Physics* **7,** 693-696, (2011).

22 Mak, K. F., Lee, C., Hone, J., Shan, J. & Heinz, T. F. "Atomically Thin MoS(2): A New Direct-Gap Semiconductor". *Physical Review Letters* **105,** 136805 136805, (2010).

23 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. "Boron nitride substrates for high-quality graphene electronics". *Nature Nanotechnology* **5,** 722-726, (2010).

24 Chen, C., Rosenblatt, S., Bolotin, K. I., Kalb, W., Kim, P., Kymissis, I., Stormer, H. L., Heinz, T. F. & Hone, J. "Performance of monolayer graphene nanomechanical resonators with electrical readout". *Nature Nanotechnology* **4,** 861-867, (2009).

25 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).

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

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

28 Hone, J., Batlogg, B., Benes, Z., Johnson, A. & Fischer, J. "Quantized phonon spectrum of single-wall carbon nanotubes". *Science* **289,** 1730-1733, (2000).

29 Hone, J., Ellwood, I., Muno, M., Mizel, A., Cohen, M., Zettl, A., Rinzler, A. & Smalley, R. "Thermoelectric power of single-walled carbon nanotubes". *Physical Review Letters* **80,** 1042-1045, (1998).