

# Kristie J. Koski

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CONTACT INFORMATION	Department of Chemistry University of California Davis 222 Chemistry; 1 Shields Ave Davis, CA 95616 USA	Phone: (530) 752-7884 koski@ucdavis.edu <a href="http://koski.ucdavis.edu">http://koski.ucdavis.edu</a>
PROFESSIONAL EXPERIENCE	<b>University of California Davis</b> Assistant Professor, Department of Chemistry	July 2016-Present
	<b>Brown University</b> Assistant Professor, Department of Chemistry	July 2013-June 2016
	<b>Stanford University</b> Postdoctoral Fellow, Department of Materials Science & Engineering <i>Advisor: Dr. Yi Cui</i>	June 2010-June 2013
	<b>Arizona State University</b> Postdoctoral Fellow, Department of Chemistry & Biochemistry <i>Advisor: Dr. Jeffery L. Yarger</i>	Feb - Dec 2009
EDUCATION	<b>University of California, Berkeley</b> Ph.D. Chemistry <i>Advisor: Dr. A. Paul Alivisatos</i>	2002-2008
	<b>University of Wyoming</b> B.S. Physics B.S. Chemistry <i>Advisor: Dr. Jeffery L. Yarger</i>	1997-2002
HONORS & AWARDS	<b>Sigma Xi Fellow</b> <b>Nano Research Young Innovator Award</b> <b>Scialog Fellow</b> Research Corp. Scialog: Advanced Energy Storage <b>JPhys50</b> <b>NSF Faculty Early CAREER</b> Development Award Research highlighted in <b>IEEE Spectrum</b> <i>Silicon Telluride Could Be the Next Big Thing in 2-D Materials</i> Research highlighted in the <b>Los Angeles Times</b> <i>Researchers use light, sound to untangle spider web riddles</i> UC Berkeley, Bears Breaking Boundaries, Second Place \$2500 UC Berkeley, Graduate Conference Travel Grant Research highlighted in <b>Photonics Spectra</b> <i>Brillouin Imaging Demonstrated</i> Univ of Wyoming, Dept. of Chem. Rebecca Raulins Undergrad Research Award University of Wyoming, EPSCOR Undergraduate Research Fellowship University of Wyoming Arts & Sciences Independent Study Award	2020 2019 2017, 2018 2017 2015 2015 2013 2008 2007 2005 2002 2000 2000
RESEARCH FUNDING	<b>Current Funding</b> National Science Foundation, <i>Chemically Tunable Acoustic Phonons in 2D Materials</i> . (9/2022-8/2025), \$325,441.	

United States - Israel Binational Science Foundation, *Optoelectronics of Layered Complex Oxide Interfaces*. (10/2023-9/2027), Co-PI: Doron Naveh, \$236,000.

National Institutes of Health, *Building biopacemakers on a suitable foundation*” (8/2023-5/2027), PI: Deborah Liu; Co-PIs: Nipavan Chiamvimonvat, James Chan, Kristie Koski. NIH R01HL159492, \$1,607,500.

### Prior Funding

National Science Foundation **CAREER**, *Acoustic Phonons in 2D Materials*. (4/2015-8/2022), \$630,000.

National Science Foundation, *MRI: Acquisition of an X-ray Photoelectron Spectrometer for Characterization of Next-Generation Materials*. (8/2018-2021), **PI: K. J. Koski**; Co-PIs: C. Fadley, C. Kronawitter, F. Osterloh, J. Velazquez, \$799,480.

Office of Naval Research, *Chemically Tunable 2D Materials*. (6/2015-6/2019), \$428,000.

National Science Foundation, Co-PI, *EPSCoR RII Track-2 FEC: Low-Cost, Efficient Next-Generation Solar Cells for the Coming Clean Energy Revolution*. (8/2015-6/2016), Responsible for a grad student for project duration (~\$200,000), PI: Nitin Padture, Total: \$4,000,000.

Brown University Seed Funding, *Non-Invasive Measurement of Mechanical Properties of Biological Materials*. (5/2014-5/2016), Dual-PI: K.J. Koski and Haneesh Kesari, \$80,000.

### PUBLICATIONS

#### Independent Career

59. K. Kushnir, S. Khanmohammadi, C. Tran,<sup>‡</sup> N. Gegechkori, T. Shi, S. Kastuar, C. Ekuma, K. J. Koski, L. V. Titova, Tailoring ultrafast photoconductive response in GeS and GeSe by zero-valent Cu intercalation. *Proc. SPIE 12683, Terahertz Emitters, Receivers, and Applications XVI* **126830B** (2023).

58. S. Khanmohammadi, C. Tran<sup>‡</sup>, E. Colin-Ulloa, K. Kushnir, **KJ Koski**, LV Titova, Ultrafast carrier dynamics in 2D GeS in response to photoexcitation across the visible-NIR range. *Ultrafast Phenomena and Nanophotonics XXVII* **12419**, 114-117 (2023).

57. V. Huynh,<sup>‡</sup> K. R. R. Rivera,<sup>‡</sup> T. Teoh,<sup>‡</sup> E. Chen,<sup>‡</sup> J. Ura,<sup>‡</sup> and **K. J. Koski**, Hafnium, titanium, and zirconium intercalation in 2D layered nanomaterials. *ACS Nanoscience AU Published* (2023).

56. B.W. Reed, C. Tran<sup>‡</sup> and **K. J. Koski**, Brillouin scattering of zero-valent Au-, Cu-, Ag-intercalated hexagonal boron nitride. *Phys. Rev. Mater.* **7**, 044003 (2023).

55. S. Khanmohammadi, C. Tran<sup>‡</sup>, E. Colin-Ulloa, K. Kushnir, **K.J. Koski**, L.V. Titova, Ultrafast carrier dynamics in 2D GeS in response to photoexcitation across the visible-NIR range. *Ultrafast Phenomena and Nanophotonics XXVII* **12419**, 114-117 (2023).

54. A. Twitto, C. Stern, M. Poplinger, I. Perelshtein, S. Saha, A. Jain, **K. J. Koski**, L. Deepak Francis, A. Ramasubramaniam, and D. Naveh, Optoelectronics of Atomic Metal-

<sup>‡</sup>=UNDERGRAD  
CO-AUTHOR

- Semiconductor Interfaces in Tin-Intercalated MoS<sub>2</sub>. *ACS Nano*, **16** 17080-17086 (2022).
53. A. L. Gross, L. Falling, M. C. Staab, M. Montero, R. R. Ullah, D. M. Nisson, **K. J. Koski**, N. J. Curro, V. Taufour, S. Nemsak and I. M. Vishik, Copper migration and surface oxidation in the aged topological insulator Cu<sub>x</sub>Bi<sub>2</sub>Se<sub>3</sub>. *J. Phys: Materials*, **5** 044005 (2022).
52. M. Wiesner, A. A. Zyuzin, **K. Koski**, A. Laitinen, J. Manninen, and P. Hakonen, Electron-phonon coupling in copper intercalated Bi<sub>2</sub>Se<sub>3</sub>. *Scientific Reports*, **12**, 12097 (2022).
51. D. Vong, M. Makena, G. Tucker, S. Gurses, T. Nematiram, D. Radhakrishnan, L. Daemen, J. Anthony, **K.J. Koski**, A. Troisi, C. Kronawitter, A. Moule, Quantitative Hole Mobility Simulation and Validation in Substituted Acenes *The Journal of Physical Chemistry Letters*, **13**, 5530-5537 (2022).
50. B.W. Reed and **K.J. Koski**, Acoustic Phonons and Elastic Moduli from Brillouin Scattering of CdPS<sub>3</sub> *J. Appl. Phys.* **131**, 165109 (2022). \*editors pick
49. C. Stern, A. Twitto, R. Z. Snitkoff, Y. Flegler, S. Saha, L. Boddapati, A. Jain, M. Wang, **K.J. Koski**, F. L. Deepak, A. Ramasubramaniam, and D. Naveh, Enhancing Light-Matter Interactions in MoS<sub>2</sub> by Copper Intercalation. *Advanced Materials* 2008779 (2021).
48. D. Radhikrishnan, M. Wang, and **K.J. Koski**, Correlation between color and elasticity in Anomia ephippium shells: Biological design to enhance the mechanical properties. *ACS Applied Bio Materials* **3**, 9012 - 9018 (2020).
47. S.Chen, V.L. Johnson<sup>‡</sup>, D. Donadio, and **K.J. Koski**, Mn-intercalated MoSe<sub>2</sub> under pressure: Electronic structure and vibrational characterization of a dilute magnetic semiconductor.. *J Chem. Phys.* **153**, 124701 (2020)
46. B.W. Reed, V. Huyhn<sup>‡</sup>, C. Tran<sup>‡</sup>, and **K.J. Koski**, Brillouin Scattering of Vanadium Pentoxide (V<sub>2</sub>O<sub>5</sub>) and Sn-Intercalated V<sub>2</sub>O<sub>5</sub>. *Phys. Rev. B*, **102** 054109 (2020).
45. D. Kwak, M. Wang, K. J. Koski, L. Zhang, H. Sokol, R. Maric, and Y. Lei. Molybdenum Trioxide (α-MoO<sub>3</sub>) Nanoribbons for Ultrasensitive Ammonia (NH<sub>3</sub>) Gas Detection: Integrated Experimental and Density Functional Theory Simulation Studies. *IEEE Sensors*, **11**, 37379. (2019).
44. K. Kushnir, T. Shi, L. Damian, A. A. Anilao II, K. J. Koski, L. V. Titova, Zero-valent Au, Cu, and Sn intercalation into GeS nanoribbons: tailoring ultrafast photoconductive response. *Ultrafast Phenomena and Nanophotonics XXIV*, **11278**, 33-39, (2020).
43. D. Kwak, H. Sokol, B.P. Moser,<sup>‡</sup> H. Ryu, K.J. Koski, R. Maric, L. Zhang, Y. Lei, Ultrasensitive ammonia (NH<sub>3</sub>) gas sensor: DFT Simulation-Directed Selection of High-Performance Metal-Doped Molybdenum Tri-oxide (α-MoO<sub>3</sub>) Nanoribbons for NH<sub>3</sub> Detection. *IEEE-Sensors*, 1-4 (2019).

42. B.W. Reed, D.R. Williams, B.P. Moser,<sup>‡</sup> and **K.J. Koski**, Chemically tuning quantized acoustic phonons in 2D layered MoO<sub>3</sub> nanoribbons. *Nano Lett.* **19**, 4406-4412 (2019).
41. V.L. Johnson<sup>‡</sup>, A. Anilao, and **K.J. Koski**, Pressure-dependent phase transitions of 2D layered silicon telluride (Si<sub>2</sub>Te<sub>3</sub>) and manganese intercalated silicon telluride. *Nano Research*, **12**, 2373-2377 (2019).
40. D. Kwak, M. Wang, **K.J. Koski**, L. Ziang, H. Sokol, R. Maric, and Y. Lei, Molybdenum tri-oxide ( $\alpha$ -MoO<sub>3</sub>) nanoribbons for ultrasensitive ammonia (NH<sub>3</sub>) gas detection: Integrated experimental and DFT simulation studies. *ACS Appl. Mater. Interfaces*, **11**, 10697-10706 (2019)
39. D. R. Williams<sup>‡</sup>, D. Nurco, N. Rahbar, and **K.J. Koski**, Elasticity of bamboo fiber variants from Brillouin spectroscopy. *Materialia*, **5**, 100240 (2019)
38. G. Li, K. Kushnir, Mengjing Wang, Y. Dong, S. Chertopalov, A. M. Rao, V. N. Mochalin, R. Podila, K. Koski, L. V. Titova. *Terahertz Spectroscopy of 2D Materials. 2018 43rd International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, 1-3 (2018).
37. K. Kushnir, M. Wang, Y. Qin, G. Li, S. Tongay, K.J. Koski, L.V. Titova. Terahertz emission from 2D nanomaterials, *Terahertz Emitters, Receivers, and Applications IX* **10756**, 83-86 (2018)
36. E.P. Grey, C.L. Browning, M. Wang, K.D. Gion, E.Y. Chao, **K.J. Koski**, A.B. Kane, and R.H. Hurt. Biodissolution and cellular response to MoO<sub>3</sub> nanoribbons and a new framework for early hazard screening for 2D materials. *Environ. Sci. Nano*, **5**, 2545 (2018)
35. Z. Lin, Y. Lei, S. Subramanian, N. Briggs, Y. Wang, C.-L. Lo, E. Yalon, D. Lloyd, S. Wu, **K.J. Koski**, R. Clark, S. Das, R. M. Wallace, T. Kuech, J. S. Bunch, X. Li, Z. Chen, E. Pop, V. H. Crespi, J. A. Robinson, and M. Terrones, Research Update: Recent progress on 2D materials beyond graphene: From ripples, defects, intercalation, and valley dynamics to straintronics and power dissipation. *Appl. Phys. Materials*. **6**, 080701 (2018)
34. M. Wang, D. Williams<sup>‡</sup>, G. Lahti<sup>‡</sup>, S. Teshima<sup>‡</sup>, D. Dominguez-Aguilar<sup>‡</sup>, R. Perry<sup>‡</sup>, and **K.J. Koski**. Semiconductor, semimetal, and heavy metal atomic intercalation in 2D layered materials. *2D Materials* **5**, 045005 (2018)
33. M. Wang, G. Lahti<sup>‡</sup>, D. Williams<sup>‡</sup>, and **K.J. Koski**. Chemically tunable full spectrum optical properties in 2D Silicon Telluride nanoplates, *ACS Nano* **12**, 6163-6169 (2018)
32. K. Kushnir, M. Wang, **K.J. Koski**, and L. Titova. Shift current in GeS nanosheets observed via emitted terahertz radiation: promise for photovoltaics, *ACS Energy Lett.* **2**, 1429-1434 (2017)
31. M. Wang, I. Al-Dhahir<sup>‡</sup>, J. Appiah<sup>‡</sup>, and **K.J. Koski**, Deintercalation of zero-valent

- metals from 2D layered chalcogenides, *Chem. Mater.* **29**, 1650-1655 (2017)
30. Y. Zhang, D.R. Manke, S. Sharifzadeh, A.L. Briseno, A. Ramasubramaniam, and **K.J. Koski**, The elastic constants of rubrene determined by Brillouin scattering and density functional theory, *Appl. Phys. Lett.* **110**, 071903 (2017)
29. M. Wang and **K.J. Koski**, Polytypic phase transitions in metal-intercalated Bi<sub>2</sub>Se<sub>3</sub>, *J. Phys.: Condens. Matter.* **28**, 494002 (2016)
28. Z. Wang, W. Zhu, Y. Qiu, X. Yi, A. von dem Bussche, A. Kane, H. Gao, **K.J. Koski**, and R. Hurt, Biological and environmental interactions of emerging two-dimensional nano-materials, *Chem. Soc. Rev.* **45**, 1750-1780 (2016)
27. Y. Zhang, F.R. Chung<sup>‡</sup>, B.W. Reed, and **K.J. Koski**, Mesoscale elastic properties of marine sponge spicules. *J. Struct. Biol.* **193**, 67-74 (2016)
26. K. Chen<sup>‡</sup>, F.R. Chung<sup>‡</sup>, M. Wang, and **K.J. Koski**, Dual-element intercalation in 2D layered Bi<sub>2</sub>Se<sub>3</sub> nanoribbons. *J. Am. Chem. Soc.* **137**, 5431-5437 (2015)
25. S. Keuleyan, M. Wang, F.R. Chung<sup>‡</sup>, J. Commons<sup>‡</sup>, and **K.J. Koski**, A Silicon-Based Two-Dimensional Chalcogenide: Growth of Si<sub>2</sub>Te<sub>3</sub> Nanoribbons and Nanoplates. *Nano Lett.* **15**, 2285-2290 (2015)
24. M. Wang and **K.J. Koski**, Reversible Chemochromic MoO<sub>3</sub> Nanoribbons through Zero-Valent Metal Intercalation. *ACS Nano* **9**, 3226-3233 (2015)
23. B.W. Reed, F.R. Chung<sup>‡</sup>, M. Wang, T. LaGrange, **K.J. Koski**, Temperature-Driven Disorder-Order Transitions in 2D Copper-Intercalated MoO<sub>3</sub> Revealed using Dynamic Transmission Electron Microscopy. *2D Materials*, **1**, 035001 (2014)

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### Before Independent Career

22. M. T. McDowell, Z. Lu, **K.J. Koski**, J. H. Yu, G. Zheng, and Y. Cui, In Situ Observation of Divergent Phase Transformations in Individual Sulfide Nanocrystals. *Nano Lett.*, **15**, 1271-1284 (2015)
21. J. Yao, **K.J. Koski**, W. Luo, J. J. Cha, L. Hu, D. Kong, V. K. Narsimhan, K. Huo, and Y. Cui, Optical transmission enhancement through chemically tuned two-dimensional bismuth chalcogenide nanoplates. *Nature Comm.* **5**, 5670 (2014)
20. J. Motter<sup>‡</sup>, **K.J. Koski**, and Y. Cui, A general strategy for zero-valent intercalation into two-dimensional layered nanomaterials. *Chem. Mater.* **26**, 2313-2317 (2014)
19. J.J. Cha, **K.J. Koski**, K.C.Y. Huang, K.X. Wang, W. Luo, D. Kong, Z. Yu, S. Fan, M.L. Brongersma, and Y. Cui, Two dimensional chalcogenide nanoplates as multiscale tunable

- metamaterials. *Nano Lett.* **13**, 5913-5918 (2013)
18. **K.J. Koski** and Y. Cui, The new skinny in two-dimensional nanomaterials. *ACS Nano*, **7**, 3739-3743 (2013)
17. D. Kong, H. Wang, J. J. Cha, M. Pasta, **K.J. Koski**, J.Yao, and Y. Cui, Synthesis of MoS<sub>2</sub> and MoSe<sub>2</sub> films with vertically aligned layers. *Nano Lett.* **13**, 1341-1347 (2013)
16. **D. Kong\***, **K.J. Koski\***, J.J. Cha, S.S. Hong, and Y. Cui, Ambipolar field effect in Sb-doped Bi<sub>2</sub>Se<sub>3</sub> nanoplates by solvothermal synthesis. *Nano Lett.* **13**, 632-636 (2012) \* **co-contributing author**
15. **K.J. Koski**, P. Akhenblit<sup>‡</sup>, K. McKiernan<sup>‡</sup>, and J.L. Yarger, Non-invasive determination of the complete elastic moduli of spider silks. *Nature Mater.* **12**, 262-267 (2012)
14. J.J. Cha, **K.J. Koski**, and Y. Cui, Topological insulator nanostructures. *Phys. Status Solidi RRL* **7**,15-25 (2012)
13. **K.J. Koski**, K. McKiernan<sup>‡</sup>, P. Akhenblit<sup>‡</sup>, and J.L. Yarger, Shear-induced rigidity in spider silk glands. *Appl. Phys. Lett.* **101**, 103701 (2012)
12. **K.J. Koski**, C.D. Wessells, B.W. Reed, J.J. Cha, D. Kong, and Y. Cui, Chemical intercalation of zero-valent metals into 2D layered Bi<sub>2</sub>Se<sub>3</sub> nanoribbons. *J. Am. Chem. Soc.* **134**, 13773-13779 (2012)
11. J.J. Cha, M. Claassen, D. Kong, S.S. Hong, **K.J. Koski**, X.L. Qi, and Y. Cui, Effects of magnetic doping on weak antilocalization in narrow Bi<sub>2</sub>Se<sub>3</sub> nanoribbons. *Nano Lett.* **12**, 4355-4359 (2012)
10. **K.J. Koski**, J.J. Cha, B.W. Reed, C.D. Wessells, D. Kong, and Y. Cui, High density chemical intercalation of zero-valent copper into Bi<sub>2</sub>Se<sub>3</sub> nanoribbons. *J. Am. Chem. Soc.* **134**, 7584-7587 (2012)
9. D. Kong, Y. Chen, J. J. Cha, Q. Zhang, J. G. Analytis, K. Lai, Z. Liu, S.-S. Hong, **K.J. Koski**, S-K. Mo, Z. Hussain, I. R. Fisher, Z.-X. Shen, Y. Cui, Ambipolar Field Effect in Topological Insulator Nanoplates of (Bi<sub>x</sub>Sb<sub>1-x</sub>)<sub>2</sub>Te<sub>3</sub>. *Nature Nanotech.* **6**, 705-709 (2011)
8. **C.L. Choi\***, **K.J. Koski\***, A.C.K. Olson, and A.P. Alivisatos, Luminescent nanocrystal strain gauge. *Proc. Natl. Acad. Sci.* **107**, 21306-21310 (2010) \* **co-contributing author**
7. B. Chen, A.E. Gleason, J. Y. Yan, **K.J. Koski**, S. Clark, and R. Jeanloz, Elasticity, strength and refractive index of argon at high pressures. *Phys. Rev. B.* **81**, 144110 (2010)
6. C.L. Choi, **K.J. Koski**, S. Sivasankar, and A.P. Alivisatos, Strain-dependent photoluminescence behavior of CdSe/CdS nanocrystals with spherical, linear, and branched topologies. *Nano Lett.* **9**, 3544-3549 (2009)

5. **K.J. Koski**, N.M. Drugan, R.K. Smith, M. Kunz, J. Knight, and A.P. Alivisatos, Structural distortions in 5 - 10 nm silver nanoparticles under high pressure. *Phys. Rev. B* **78**, 165410 (2008)
4. A. Fu, W. Gu, B. Boussert, **K. Koski**, D. Gerion, L. Manna, M. Gros, C. Larabell, and A.P. Alivisatos, Semiconductor quantum rods as single molecule fluorescent biological labels. *Nano Lett.* **7**, 179-182 (2007)
3. **K.J. Koski** and J.L. Yarger, Brillouin imaging. *Appl. Phys. Lett.* **87**, 061903 (2005)
2. **K.J. Koski**, J. Müller, H. Hochheimer, and J.L. Yarger, High-pressure angle dispersive Brillouin spectroscopy. *Rev. Sci. Instr.* **73**, 1235-1241 (2002)
1. **K.J. Koski**, J. Müller, H. Hochheimer, and J.L. Yarger, High-pressure Brillouin spectroscopy using an angle dispersive Fabry-Perot interferometer *NATO – Frontiers in High-Pressure Research II: Application of High Pressure to Low-Dimensional Novel Electronic Materials.*, eds. H.D. Hochheimer, B. Kuchta, P. Dorhout, J.L. Yarger., Vol. **48**, 533-540 (2001)

## INVITED TALKS

- MRS Spring Meeting in Seattle, March, 2024 *upcoming*.
- BioBrillouin, University College, Dublin. December , 2023 *upcoming*..
- Institute of Physics, Montanuniversitaet Leoben, Austria. May 30, 2022.
- BioBrillouin Virtual Training School, October 11-12, 2021.
- ICAVS 11 Online, August 26, 2021.
- MIT, Department of Chemical Engineering, April 23, 2021.
- Ecole de Physique Des Houches, Coupling of light waves to sound, Mar 22, 2021 - April 2, 2021.
- University of Illinois Urbana-Champaign, Department of Chemistry. April 31, 2021.
- BioBrillouin Virtual Meeting, September 12-14, 2020.
- University of California Berkeley Department of Materials Science & Engineering, January 23, 2020.
- Rice University, Department of Materials Science & Engineering, September 19, 2019.
- ACS Fall Meeting in San Diego, August, 2019.
- APS March Meeting in Boston, March 6, 2019.
- MRS Fall Meeting in Boston, November 28, 2018.
- Advances in Brillouin Scattering & BioBrillouin Meeting, September 12-14, 2018.
- University of Illinois Urbana-Champaign, Department of Physics. April 27, 2018.
- NASCC, University of California Santa Barbara. August 16-19, 2017.
- Graphene and Beyond Workshop, Pennsylvania State University. May 10, 2017.

- University of California Davis, Department of Physics Condensed Matter Seminar, April 27, 2017.
- Brandeis University, Department of Chemistry Colloquium. April 19, 2017.
- California State University Sacramento, Department of Chemistry Colloquium. April 7, 2017.
- 253rd ACS National Meeting in San Francisco, California, April 3, 2017.
- Drexel University, Dept. of Materials Science and Engineering Colloquium. February 22, 2017.
- Brown University, Department of Physics Condensed Matter Colloquium, April 7, 2016.
- UC: Los Angeles, Department of Materials Science and Engineering Colloquium. May 8, 2016.
- University of Rhode Island, Department of Chemistry Colloquium. March 7, 2016.
- University of California: Los Angeles, Department of Chemistry Colloquium. February 8, 2016.
- University of California: Davis, Department of Materials Science Colloquium. January 22, 2016.
- University of California: Merced Department of Chemistry Seminar. January 18, 2016.
- University of California: Davis Department of Chemistry Seminar. December 2, 2015.
- Colby College, Department of Chemistry Colloquium. November 6, 2015.
- Worcester Polytechnic Institute, Department of Physics Colloquium. November 3, 2015.
- Univ of Massachusetts Amherst, Dept of Mechanical & Industrial Engineering. October 19, 2015.
- Trinity College, Department of Chemistry Colloquium. October 9, 2015.
- University of Maine, Department of Chemistry Colloquium. October 6, 2015.
- University of Wyoming, Department of Chemistry Colloquium. October 2, 2015.
- Bridgewater State University, Department of Chemistry Colloquium. February 13, 2015.
- Materials Research Society Meeting, December 2014.
- University of Massachusetts Dartmouth, Department of Chemistry Colloquium. October 29, 2014.
- World Congress of Biomechanics, June 2014.
- Workshop Graphene and Beyond: From Atoms to Applications. Penn State, April 2014.
- ChemDUG: Nanomaterials Research, October 21, 2013.
- Boston Regional Inorganic Colloquium, October 19, 2013.
- International Symposium on Integrated Functionalities, July 2013.
- Stanford University, Department of Materials Science & Engineering Colloquium, February 2013.
- Brown University, Chemistry Colloquium, December 2012.



- Molecular Foundry, Lawrence Berkeley National Laboratory, December 2009.
- Workshop on Advances in High Pressure Crystallography at Large Scale Facilities, Wadham College, University of Oxford, Oxford, U.K., September 2007.

OTHER  
PRESENTATIONS

**Talks:** California US Government (CA-USG) Workshop on 2D Materials - UC Irvine, September 2023. APS March Meeting - Las Vegas, NV, March 2023. APS March Meeting - Chicago, IL, March 2022. ACS Meeting - Boston, MA, August 2018. APS Meeting - Los Angeles, CA, March 2018. ACS Meeting - New Orleans, LA, April 2017. ACS Meeting - Pennsylvania, PA, August 2016. MRS Meeting - San Francisco, CA, April 2015. ACS Meeting - Denver, CO, March 2015. ACS Meeting - San Francisco CA, August 2014. Ivy Plus Symposium - Massachusetts Institute of Technology, Boston MA, March 2014 APS Meeting - Denver, CO, March 2014. MRS Meeting - San Francisco CA, April 2012. MRS Meeting - Boston MA, December 2011. ACS Meeting - Denver CO, August 2011. Four Corners Fall Section APS Meeting - Fort Collins CO, October 2000.

**Poster Presentations:** GRC: 2D Materials, June 2018. Scialog, Tuscon Az, November 2018. Scialog, Tuscon Az, November 2017. NATO: Frontiers in High Pressure Research Conference - Pinagree Park, CO, June 2001.

PATENTS

- US Patent Pending Application Serial No. 18/312,840. Application title: Metal Intercalation in Layered Semiconductor Compounds for Enhancing Photodetection BIRAD s ref: 7729-Prov (2022)

- US Patent 20,120,211,670. C. L. Choi, **K.J. Koski**, S. Sanjeevi, A.P. Alivisatos, Systems and Methods of Detecting Force and Stress Using Tetrapod Nanocrystal.

SELECT MEDIA  
COVERAGE

**Misc**

Chemistry preprints pick up steam. *C&E News* Appeared in Vol 97, Iss 3 (2019)

**Silicon Telluride**

Silicon Telluride Could Be the Next Big Thing in 2-D Materials. *IEEE Spectrum* (2015)

These new semiconductors look just like candy. *Gizmodo* (2015)

Chemists make new silicon-based nanomaterials. *Science Daily; Phys.org* (2015)

**Intercalation**

Intercalation tunes plasmonic properties. *NanoTechWeb* (2013)

**Spider Silk**

Researchers use light, sound to untangle spider web riddles. *Los Angeles Times* (2013)

Scientists decode secret of spider silk's strength. *Vancouver Desi* (2013)

Researchers unravel mysteries of spider silk. *Phys.org* (2013)

Scientists decode secret behind spider silk's strength. *Business Standard* (2013)

Scientists decode secret of spider silk's strength. *Yahoo! news* (2013)

Why is spider silk five times stronger than piano wire? *Slate.com* (2013)

Secret behind spider silk's strength found. *Times of India* (2013)

Spider Silk's Elasticity Measured by Light Scattering Imaging. *Materials 360* (2013)

**Brillouin Imaging**Brillouin Imaging Demonstrated. *Photonics Spectra* (2005)

## TEACHING

**University of California Davis**

Physical Chemistry I for Biologists (CHE 107a)	Spring 2020, 2021, 2022, 2023
Surface Analytical Chemistry (CHE 241a)	Fall 2019, 2022
Analytical Chemistry (CHE 240)	Fall 2021
Physical Chemistry I (CHE 110a)	Fall 2016, 2017, 2018, 2019, 2020, 2022
Instrumental Methods (CHE 115)	Winter 2017, 2018
Third year seminar (CHE 294)	Winter 2018

**Brown University**

Electron Microscopy (Eng 240 / Chem 240)	Spring 2016
General Chemistry (Equilibrium, Rate, and Structure; Chem 330))	Fall 2015
Nanoscale Materials: Synthesis and Applications (Chem 1700)	Fall 2014
Applied Materials Chemistry (Chem 1560M)	Fall 2013; Spring 2015

**Yu Hu; Kaia Yellowhorse; Alec Schwartz; Nicholas Lundgren; Pranit Narayanaswamy; Ryan Bender; Marc Andrews; Bryan Liu; David Kinney; Andranik Avedisyan, Tate Chatfield, Benjamin Barrett**

**Jared Ura, Gengming Jiang, Gwendolyn Dillon, Adam Dinh**

## DEPARTMENT

## SERVICE

## BROWN UNIVERSITY

- Graduate Recruitment Committee, 2013 - 2016
- Graduate Admissions Committee, 2013 - 2016
- Safety Committee, 2013 - 2016
- Inorganic Faculty Search Committee
- Chair; Graduate Recruitment Committee, 2015 - 2016

## DEPARTMENT

## SERVICE

## UC DAVIS

- Analytical Chemistry Faculty Search Committee, 2021-2022
- Curriculum Committee, 2016-2017; 2018-2023
- Undergraduate Affairs, 2016-2023
- Seminar Committee, 2017-2022
- Graduate Group Membership Committee, 2016-2017
- Graduate Admissions Committee, 2018-2019
- Advanced Scholar Mentoring Committee, 2017-2018
- International & industrial Partnerships Committee, 2017-2018
- Chem 3 Assessment Committee, 2017-2018
- NMR Faculty Search Committee, 2017-2018
- *ad hoc* Chemistry Grad Group Assessment Committee (Taufour), 2017-2018
- LaRock Symposium Judge, 2018
- *ad hoc* Faculty evaluation committee, 2018
- Chem 4 Committee, 2019-present
- Chemistry Chair Selection Committee, 2019
- Analytical Chemistry Faculty Search Committee, 2021-2022

- UNIVERSITY SERVICE· AMCaT Advisory Committee, 2018-2023
- Graduate Program Review Committee, 2020-2021
  - Course Materials and Service Fees Committee (approves university fees), 2018-2021
  - Reviewer for internal grants competitions, 2018, 2019, 2020, 2021, 2022
  - Graduate Fellowship Review Committee, 2017-2018
- PROFESSIONAL SERVICE
- Board, International BioBrillouin Society, 2021-Present
  - Co-organizer 2D Materials Session "Emerging 2D Materials AND 2D Heterostructures: Synthesis, Characterization and Collective Phenomena", Mexico IMRC, 2019
  - Chair; ACS Session Inorganic Chemistry, 8/10/2014
  - Poster Judge; MRS Fall Meeting, 11/2015
  - Chair; MRS Spring Meeting Session 2D Materials, 4/3/2015
  - Chair; ACS Session Inorganic Chemistry, 8/16/2016
  - Chair; ACS Session Inorganic Chemistry, 2/4/2017
  - Chair; MRS Fall Meeting Session 2D Materials, 11/29/2018
  - Chair; APS March Meeting Session 2D Materials, 3/7/2019
  - NSF Panel, 3/2016; 10/2016; 3/2017; 3/2019; 4/2019; 5/2023
  - *ad hoc* reviewer NSF, 2018, 2019
  - 2DCC-MIP reviewer. 2017-Present
  - ACS PRF Reviewer , 2/2014; 2/2017
  - North Carolina Biotechnology Center Reviewer, 2017
  - *ad hoc* reviewer DOE, 2018
  - Reviewer for journals: *Nature Materials*, *Nature Communications*, *Nature Chemistry*, *Nano Letters*, *Scientific Reports*, *ACS Nano*, *Journal of the American Chemical Society*, *The Journal of Physical Chemistry. Inorganic Chemistry*, *Chemistry of Materials*, *Journal of Alloys and Compounds*, *Chemical Vapor Deposition*, *Nanoscale*, *ACS Applied Materials & Interfaces*, *Acta Materialia*, *Soft Matter*, *ACS Central Science*, *ACS Biomaterials Science & Engineering*, *ACS Applied Energy Materials*, *Advanced Materials*, *Crystal Engineering Communications*, *Small*, *Accounts of Chemical Research*, *Journal of Physical Chemistry Letters*, *Journal of Materials Chemistry C*, *2D Materials*, *Inorganic Chemistry*, *Journal of Alloys and Compounds*, *Chemical Vapor Deposition*, *Nanoscale*, *Superconducting Science and Technology*, *Crystal Growth & Design*, *ACS Catalysis*, *ACS Applied Energy Materials*, *ACS Omega*, *AIP Advances*, *Acta Materialia*, *Soft Matter*, *Applied Science*, *Applied Spectroscopy*, *Chemical Reviews*, *Journal of Biophotonics*, *Chemical Society Reviews*
- SYNERGISTIC ACTIVITIES
- Founding Member of the International BioBrillouin Society
  - Board. International BioBrillouin Society
  - Member of the American Chemical Society
  - Member of the American Physical Society
  - Member of the Materials Research Society.
  - JerryTheBot - Discord python teaching chemistry bot.
  - Periodic Table of Intercalation: <http://koski.ucdavis.edu/Intercalation/>
  - Faculty Mentor for CAMP (California Alliance for Minority Participation) Scholars 2017-2018
  - Committee: US West Kayak Surf Association 2008-2012

· Committee: US Waveski Association, Secretary

2022-Present