

## MICHAEL K. FUCCILLO

### EDUCATION

July 2010- Mar. 2015	<b>Princeton University, Princeton, NJ</b> PhD, Chemistry (Solid State Chemistry under Robert Cava)
Sept. 2005- May 2010	<b>Northeastern University, Boston, MA</b> BS, Chemistry, Minor in Physics, Magna cum laude
Sept. 2009- Dec. 2009	<b>Charles University, Prague, Czech Republic</b> Study Abroad, East and Central European Studies

### EMPLOYMENT

Jul. 2014- Present	<b>Chief Science Officer, Wellth, Brooklyn, NY</b> Head of research operations including clinical trials and grant writing <u>Areas of expertise:</u> behavioral economics, chronic disease, eHealth, IT
May 2007- Feb. 2010	<b>Laboratory Assistant, NuVant Systems, Crown Point, IN</b> Fuel cell catalyst and membrane materials research and quality testing <u>Areas of expertise:</u> fuel cell design, catalysts, membrane materials
July 2008- June 2010	<b>Laboratory Assistant, Nano-Terra, Cambridge, MA</b> Product research and development for commercialized nanotechnologies <u>Areas of expertise:</u> nanomaterials, surface science, lithography, polymers
June 2006- July 2006	<b>Legal Research Intern, HBSS Law, Cambridge, MA</b> Prepared litigation for class action pharmaceutical fraud antitrust lawsuit <u>Areas of expertise:</u> pharmaceutical patents and generic substitute laws
May 2004- June 2006	<b>Legal Research Intern, Nantero, Woburn, MA</b> Proofread and edited dozens of scientific patent applications and filings <u>Areas of expertise:</u> semiconductor devices, nanotubes, computer memory

### SCIENTIFIC ACHIEVEMENTS

- Published **14 peer-reviewed articles** in chemistry, physics, and materials science journals
- Designed and led **two clinical trials** with researchers at leading academic medical centers
- PhD thesis work granted **invited talk** at the American Physical Society March 2014 Meeting
- Research publication featured as **Key Scientific Article** in Advances in Engineering news website
- Twice served as **invited peer reviewer**: Applied Physics Letters and Journal of Applied Physics
- Worked for **four technology start-ups**: eHealth, semiconductors, fuel cells, nanotechnology

### DOCTORAL RESEARCH

*Solid-State Chemistry*, PhD Student at Princeton, advised by Robert J Cava

- Design, crystal growth, physical property characterization of novel electronic and magnetic materials
  - Focus on semiconductors, thermoelectrics, topological insulators, superconductors, synthesis

## TEACHING EXPERIENCE

### Princeton University

- Research mentor to four undergraduate students carrying out junior and senior thesis work
- TA for CHM 201 General Chemistry I

### Northeastern University

- TA for CHM 3404 Physical Chemistry 2 and CHM 3522 Instrumental Methods and Analysis Lab

### Private Tutoring

- High school and university students in various courses for chemistry, physics, math, programming

## PUBLICATION LIST (350+ CITATIONS, H-INDEX = 9)

1. MK Fuccillo, QD Gibson, MN Ali, LM Schoop, and RJ Cava, "Correlated Evolution of Colossal Thermoelectric Effect and Kondo Insulating Behavior," *Applied Physics Letters Materials* 1, 062102 (2013). (Editor's Pick, January 2014; Invited for APS talk)
2. MK Fuccillo, S Jia, ME Charles, and RJ Cava, "Thermoelectric Properties of  $\text{Bi}_2\text{Te}_2\text{Se}$  Compensated by Native Defects and Sn Doping," *Journal of Electronic Materials* 42 (2013) 1. (Featured as a Key Scientific Article in *Advances in Engineering*)
3. MK Fuccillo, ME Charles, YS Hor, S Jia, and RJ Cava, "Low Temperature Thermoelectric Properties of  $\text{Bi}_{2-x}\text{Sb}_x\text{TeSe}_2$  Crystals near the n-p Crossover," *Solid State Communications* 152 (2012) 1208.
4. W Xie, MK Fuccillo, BF Phelan, H Luo, RJ Cava, "Stabilization of the  $\text{Ti}_3\text{Co}_5\text{B}_2$ -type structure for  $\text{Ti}_{3-x}\text{Si}_x\text{Ru}_5\text{B}_2$  through Si-Ti substitution," *Journal of Solid State Chemistry* 227, (2015) 92.
5. H Luo, JW Krizan, L Muechler, N Haldolaarachchige, T Klimczuk, W Xie, MK Fuccillo, C Felser, and RJ Cava, "A large family of filled skutterudites stabilized by electron count," *Nature Communications*, 6 (2015) 6849.
6. EM Seibel, LM Schoop, W Xie, QD Gibson, JB Webb, MK Fuccillo, JW Krizan, and RJ Cava, "Gold-Gold Bonding: The Key to Stabilizing the 19-Electron Ternary Phases  $\text{LnAuSb}$  ( $\text{Ln} = \text{La-Nd}$  and  $\text{Sm}$ )," *Journal of the American Chemical Society* 137 (2015) 1282.
7. QD Gibson, D Evtushinsky, AN Yaresko, VB Zabolotnyy, MN Ali, MK Fuccillo, J Van den Brink, B Buchner, RJ Cava and SV Borisenko, "Quasi One Dimensional Dirac Electrons on the Surface of  $\text{Ru}_2\text{Sn}_3$ ," *Scientific Reports*, 2014 (In Press)
8. RJ Cava, H Ji, MK Fuccillo, QD Gibson, and YS Hor, "Crystal Structure and Chemistry of Topological Insulators," *Journal of Materials Chemistry C* 1, (2013) 3176. (Feature Article with journal cover artwork I designed, Hot Article of 2013)
9. H Luo, T Klimczuk, L Muechler, L Schoop, D Hirai, MK Fuccillo, C Felser, and RJ Cava, "Superconductivity in the  $\text{Cu}(\text{Ir}_{1-x}\text{Pt}_x)_2\text{Se}_4$  spinel," *Physical Review B*, 87 (2013) 214510.
10. MN Ali, H Ji, D Hirai, MK Fuccillo, and RJ Cava, "Synthesis and Characterization of Two Crystallographic Forms of  $\text{Ag}_{0.79}\text{VS}_2$ ," *Journal of Solid State Chemistry*, 202 (2013) 77.
11. Huiwen Ji, JM Allred, MK Fuccillo, ME Charles, M Neupane, LA Wray, MZ Hasan, and RJ Cava, " $\text{Bi}_2\text{Te}_{1.6}\text{S}_{1.4}$ : A Topological Insulator in the Tetradymite Family," *Physical Review B*, 85, 201103(R) (2012). (Rapid Communication)
12. S Jia, H Beidenkopf, I Drozdov, MK Fuccillo, J Seo, J Xiong, NP Ong, Ali Yazdani, and RJ Cava, "Defects and High Bulk Resistivities in the Bi-rich Tetradymite Topological Insulator  $\text{Bi}_{2+x}\text{Te}_{2-x}\text{Se}$ ," *Physical Review B* 86, 165119 (2012). (Editors' Suggestion)
13. S Jia, Huiwen Ji, E Climent-Pascual, MK Fuccillo, ME Charles, Jun Xiong, NP Ong, and RJ Cava, "Low-carrier-concentration Crystals of the Topological Insulator  $\text{Bi}_2\text{Te}_2\text{Se}$ ," *Physical Review B*, 84, 235206 (2011). (Editors' Suggestion)

14. M Webber, N Dimakis, D Kumari, M Fuccillo, and ES Smotkin, "Mechanically Coupled Internal Coordinates of Ionomer Vibrational Modes," *Macromolecules*, 43 (2010) 5500.

## CLINICAL TRIALS

1. Wellth Inc. in collaboration with University of Pennsylvania. PI: Barbara Riegel, CO-I: Stephen Kimmel, MK Fuccillo (2017) "A Behavioral Economics-Based Telehealth Intervention to Improve Post-MI Medication Adherence." <https://clinicaltrials.gov/ct2/show/NCT03022266>
2. Wellth Inc. in collaboration with Princeton HealthCare System. PI: Steven Bergmann, CO-I: MK Fuccillo (2017) "Mobile App with Patient Financial Incentives for Adherence to Heart Failure Medications & Daily Self-Weighing." <https://clinicaltrials.gov/ct2/show/NCT03034551>

## ORAL PRESENTATIONS

1. MK Fuccillo; "Financial Incentives and Smart Mobile Design to Improve Population Health," *Population Health Colloquium XVII*, March 2017, Philadelphia, PA.
2. MK Fuccillo and RJ Cava; "Improving Low-temp Thermoelectricity in Bi-Te-Se Tetradymites," *2011 Superconductivity Program Review and USAF-China Workshop*, December 2011, Santa Barbara, CA.
3. M Fuccillo, S Stoupin, EA Lewis, D Ramaker, C Segre, and ES Smotkin, "In situ Surface Enhanced X-ray Absorption Spectroscopy of Anode Catalyst in Operating Direct Methanol Fuel Cells," *213th Electrochemical Society Meeting*, May 2008, Phoenix, AZ.
4. M Fuccillo, N Dimakis, and E Smotkin, "Coverage Dependent CO Adsorption on Sub-Nanoscale Pt(100) Crystallites Characterized by DFT and Classical Dipole-Dipole Electrostatics," *212<sup>th</sup> Electrochemical Society Meeting*, October 2007, Washington, DC.

## OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

2007	National Society of Collegiate Scholars
2008	Golden Key International Honour Society
2008	The Academy at Northeastern University
2013-2014	Invited peer reviewer for Applied Physics Letters and Journal of Applied Physics
2015-2017	Question Writer for National Science Bowl

## HEALTH TECH STARTUP ACCELERATORS:

2015	Tigerlabs	(Princeton, NJ)
2015	New York Digital Health Accelerator	(New York, NY)
2015	Healthbox Studios	(Chicago, IL)
2016	Dreamit	(Philadelphia, PA)

## HONORS AND AWARDS

2005-2010	Northeastern University Excellence Scholarship
2010	Magna cum laude, Northeastern University
2010	American Chemical Society Division of Inorganic Chemistry Award in Inorganic Chemistry
2012	M.A. in Chemistry awarded with distinction, Princeton University
2014	PhD thesis work granted an invited talk at the American Physical Society March 2014 Meeting
2015	Winner, Center for Health Care Strategies Super-Utilizer Health Innovation Challenge (Wellth)
2017	Winner, Digital Health Marketplace Grant with Mount Sinai (Wellth)