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Mr. Funk,

This is a letter of interest/response for the position of CRO & AVPR at Oakland University based on the recruitment request from Funk & Associates. I am presently the Asst. Vice Chancellor for Research & Economic Development, and, Professor of Physics, at the University of Missouri – Kansas City. My candidacy for the OU position is founded in strong empathy and experience with faculty engaged in all aspects of the university research enterprise, as well as experience from my personal research group.

Two snapshot example areas of my work include:

Growing/Enhancing the University Research Stature

– conceived of and helped execute on the first faculty research symposium. This now annual poster session and social forum has formed new collaborations and increased research morale.

– conceived of and developed white paper guidance, review and non-technical proposal preparation service for faculty. This program has opened new doors and increased submission quality.

– helped to reestablish and develop internal faculty research program, including developing request for proposals, suggested proposal template, reviewer guidelines, and review reconciliation.

– following a rash of accidents and federal violations, I stood up a university wide Chemical Safety Committee. This included developing the charge, grooming a chair, and bringing together select members from the Division of Environmental Health and Safety, staff, and faculty.

– stood up the Chem/Bio Defense Group; the intention of this group is to respin concepts and proposals, aimed at traditional health and life science sponsors, to defense sponsors.

Intellectual Property and Economic Development

– acting as a technical/administrative liaison between faculty and the director of the tech transfer office on disputed disclosures, interinstitutional agreements, and providing recommendations for IP sharing with sponsors.

– serving on the university wide Technology Advisory Committee and system-wide Patent and Copyright Committee; recent actions include changes to the collected rules for inventor rights in the context of streamlining the decision process and incentivizing a win-win for the university/inventor.

– setup master collaboration agreements with major industry and government partners for monetary and non-monetary exchange of services and expertise.

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Other work in my role as AVCR includes: acting as the *de facto* Export Control Officer, *de facto* Associate Dean of Research for the School of Computing and Engineering, studying/solving inefficiencies/problems in pre-award, post-award, and compliance in the context faculty affairs for research, serve as *ex officio* on the Research Advisory Council, Safety, and Compliance committees, stand in for the VCR, and work directly with individual and groups of faculty on white paper/proposal/opportunity development.

In my Physics role, I teach non-major introductory courses, upper level undergraduate and graduate level courses. Course names and a full list of service roles are included in my CV. As of December 2015, author of 69 peer reviewed journal articles, 4 book chapters, 2 invited reviews, 5 issued patents, 2 pending patents, 8 major technical reports, and cited more than 1287 times. An H-index of 20, i10-index of 38, 45 invited talks, 20 contributed talks, 21 undergraduates supervised, 16 graduate students supervised. 105 proposals or white papers submitted, 28 proposals awarded at a total of over $10M as PI, 8 of 8 beamtime proposals awarded, and 2 proposals pending. Of the five patents, two are licensed and two companies spun out with multiple Phase I and Phase II SBIR and STTRs.

Given the above experience, creativity, strive for excellence, and rapport with faculty, I am enthusiastic and grateful for your consideration of my application for the position of CRO & AVPR at OU.

Respectfully,

Anthony N. Caruso
Professor of Physics
Asst. Vice Chancellor for Research & Economic Development

Anthony N. Caruso

A. Educational Background

Ph.D. in Physics and Astronomy	University of Nebraska, Lincoln, NE	2004
M.S. in Physics and Astronomy	University of Nebraska, Lincoln, NE	2003
B.A. in Physics	Bethany College, Lindsborg, KS	2000
B.A. in Mathematics	Bethany College, Lindsborg, KS	2000
Minor in Philosophy	Bethany College, Lindsborg, KS	2000

B. Honors and Awards

R&D100 Analytical Category - Antero/Shavano Neutron Spectrometer	2015
N.T. Veatch Award for Distinguished Research and Creative Activity	2014
University of Missouri Presidential Award for Early Career Excellence	2012
Office of Naval Research Young Investigator Awardee	2012
Defense Threat Reduction Agency Young Investigator Awardee	2010
University of Nebraska Folsom Dissertation Prize	2005

C. Employment

09/14 – present	Assistant Vice Chancellor for Research, Univ. Missouri – Kansas City
09/14 – present	Professor of Physics, University of Missouri – Kansas City
09/07 – present	Fellow of the Graduate and Doctoral Faculty, Univ. Missouri – KC
05/11 – 09/14	Associate Professor of Physics, University of Missouri – Kansas City
08/07 – 05/11	Assistant Professor of Physics, University of Missouri – Kansas City
08/06 – 07/07	Fellow of the Graduate School, North Dakota State University
05/05 – 07/07	Res. Scientist/ Asst. Res. Professor, North Dakota State University
10/04 – 05/05	Postdoctoral researcher, University of Nebraska - Lincoln
08/01 – 10/04	Graduate research assistant, University of Nebraska - Lincoln
08/02 – 12/02	Lecturer of Physics, Union College, Lincoln, NE [quantum mechanics]
01/01 – 08/03	Graduate teaching assistant, University of Nebraska - Lincoln

D. Publication Record

As of December 2015, author of 69 peer reviewed journal articles, 4 book chapters, 2 invited reviews, 5 issued patents, 2 pending patents, 8 major technical reports, and cited more than 1287 times. An H-index of 20, i10-index of 38, 45 invited talks, 20 contributed talks, 21 undergraduates supervised, 16 graduate students supervised. 105 proposals or white papers submitted, 28 proposals awarded at a total of over $10M as PI, 8 of 8 beamtime proposals awarded, and 2 proposals pending.

1. Bo Xu, Jaewu Choi, A.N. Caruso, and P.A. Dowben, "Band Filling and Depletion Through the Doping of Polyaniline Thin Films," *Appl. Phys. Lett.* **80** (2002) 4342–4344. DOI: 10.1063/1.1484247

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5. B. Xu, A.N. Caruso, and P.A. Dowben, "Interfaces with Vapor Evaporated Polyaniline Thin Films," *Applied Physics A* **77** (2003) 155. DOI: 10.1007/s00339-003-2082-z

6. Ruihua Cheng, A.N. Caruso, L. Yuan, S.-H. Liou, and P.A. Dowben, "Magnetic coupling in Co/Cr_2O_3/CrO_2 "trilayer" films," *Appl. Phys. Lett.* **82** (2003) 1443. DOI: 10.1063/1.1558212

7. A.N. Caruso,Ya.B. Losovyj, Jaewu Choi, and P.A. Dowben, "The Adsorption and Decomposition of HS-$(CH_2)_2$-$(CF_2)_7$-CF_3 Thin Films on Au(111)," *Materials Letters* **57** (2003) 3614–3617. DOI: 10.1016/S0167-577X(03)00136-8

8. A.N. Caruso, Rajesh Rajesekaran, J. Redepenning, Ya.B. Losovyj, and P. A. Dowben, "Substrate Dependent Bonding of Chemisorbed 1,1'-Biphenyl-4,4'-Dimethanethiol," *Mat. Res. Soc. Symp. Proc.* **775** (2003) P6.12.1. DOI: 10.1557/PROC-775-P6.12

9. A.N. Caruso, L. Bernard, B. Xu, and P.A. Dowben, "Comparison of Adsorbed Orthocarborane and Metacarborane on Metal Surfaces," *J. Phys. Chem. B* **107** (2003) 9620–9623. DOI: 10.1021/jp0354088

10. A.N. Caruso, Snjezana Balaz, B. Xu, P.A. Dowben, A.S. McMullen, J.I. Brand, Y.B. Losovyj, and D.N. McIlroy, "The Surface Photovoltage Effects on the Isomeric Semiconductors of Boron-Carbide," *Appl. Phys. Lett.* **84** (2004) 1302. DOI: 10.1063/1.1648136

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12. A.N. Caruso, R. Rajesh, G. Gallup, J. Redepenning, and P. A. Dowben, "Substrate dependent orientation and bonding of biphenyldimethyldithiol," *J. Phys.: Condens. Matter* **16** (2004) 845–860. DOI: 10.1088/0953-8984/16/6/014

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14. A.N. Caruso, R. Rajesh, G. Gallup, J. Redepenning, and P. A. Dowben, "Orientation and bonding of 4,4'-biphenyldiisocyanide," *J. Phys. Chem. B* **108** (2004) 6910–6914. http://dx.doi.org/10.1021/jp037710m

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60. T.M. Oakes, S.L. Bellinger, W.H. Miller, E.R. Myers, R.G. Fronk, B.W Cooper, T.J. Sobering, P.R. Scott, P. Ugorowski, D.S. McGregor, J.K. Shultis and A.N. Caruso, "An

Accurate and Portable Solid State Neutron Rem Meter", *Nucl. Instr. Meth. Phys. Res. A,* **719** (2013) 6-12. http://dx.doi.org/10.1016/j.nima.2013.03.060

61. A.P. Weber, A.N. Caruso, E. Vescovo, S. Z. Janjua, J. T. Sadowski, Md. E. Ali, K.Tarafder, and P. M. Oppeneer, "Magnetic coupling of Fe-porphyrin molecules adsorbed on clean and c(2x2) oxygen reconstructed Co(100) investigated by spin-polarized photoemission spectroscopy", *Phys. Rev. B* **87** (2013) 184411. http://dx.doi.org/10.1103/PhysRevB.87.184411

62. Mingsheng Chen, Ying Zhang, M. Sky Driver, Anthony N. Caruso, Qingsong Yu, and Yong Wang, "Surface modification of several dental substrates by non-thermal, atmospheric plasma brush", *Dental Materials* **29** (2013) 871-880. http://dx.doi.org/10.1016/j.dental.2013.05.002

63. Ibrahima Youm, Joseph D. Bazzzil, Joseph W. Otto, Anthony Caruso, James B. Murowchick, Bi-Botti C. Youan, "Influence of Surface Chemistry on Cytotoxicity and Cellular Uptake of Nanocapsules in Breast Cancer and Phagocytic Cells", *J. Pharma. Sci.*, **16** (2014) 550-567. http://dx.doi.org/10.1208/S12248-014-9572-0

64. Sean W. King, Michelle M. Paquette, Joseph W. Otto, Anthony N. Caruso, Justin Brockman, Jeff Bielefeld, Markus Kuhn, and Benjamin French, "Valence and Conduction Band Offsets at Amorphous Hexagonal Boron Nitride Interfaces with Silicon Network Dielectrics", *Appl. Phys. Lett.*, **104** (2014) 102901. http://dx.doi.org/10.1063/1.4867890

65. T. Yilmaz, I. Pletikosic, A. P. Weber, J. T. Sadowski, G. D. Gu, A. N. Caruso, B. Sinkovic, and T. Valla, "Absence of a Proximity Effect in a Topological Insulator on a Cuprate Superconductor: $Bi_2Se_3/Bi_2Sr_2CaCu_2O_{8+\delta}$", *Phys. Rev. Lett.* **113** (2014) 067003. http://dx.doi.org/10.1103/PhysRevLett.113.067003

66. A.P. Weber, Q.D. Gibson, Huiwen Ji, I. Pletikosić, A.N. Caruso, E. Vescovo, A.V. Fedorov, R.J. Cava, and T. Valla, "Gapped Surface States in a Strong-Topological-Insulator Material", *Phys. Rev. Lett.* **114** (2015) 256401. http://dx.doi.org/10.1103/PhysRevLett.114.256401

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67. Bradley J. Nordell, Sudarshan Karki, Thuong D. Nguyen, Paul Rulis, A.N. Caruso, Sudhaunshu S. Purohit, Han Li, Sean W. King, Dhanadeep Dutta, David Gidley, William A. Lanford, and Michelle M. Paquette, "The Influence of Hydrogen on the Chemical, Mechanical, Optical/Electronic, and Electrical Transport Properties of Amorphous Hydrogenated Boron Carbide", *J. Appl. Phys.* **118** (2015) 035703. http://dx.doi.org/10.1063/1.4927037

68. C.B. Hoshor, T.M. Oakes, E.R. Myers, B.J. Rogers, J.E. Currie, S.M. Young, J. A. Crow, P.R. Scott, W.H. Miller, S. L. Bellinger, D.S. McGregor and A.N. Caruso, "A Portable and Wide Energy Range Semiconductor-based Neutron Spectrometer", *Nuc. Instr. Meth. Phys. Res. A,* **803** (2015) 68-81. http://dx.doi.org/10.1016/j.nima.2015.08.077

69. W. A. Lanford, M. Parenti, B. J. Nordell, M. M. Paquette, A.N. Caruso, M. Mäntymäki, J. Hämäläinen, M. Ritala, K. Klepper, V. Miikkulainen, O. Nilsen, W. Tenhaeff, N. Dudney, D. Koh, S. Banerjee, E. Mays, J. Bielefeld, and S.W. King, "Nuclear Reaction Analysis for H, Li, Be, B, C, N, O and F with an RBS Check", *Proc. 2015 Intl. Conf. Ion Beam Analysis*, in press. http://dx.doi.org/10.1016/j.nimb.2015.10.052

70. Michelle M. Paquette, Joseph W. Otto, William A. Lanford, Bradley J. Nordell, Sudarshan Karki, Sean W. King, and A. N. Caruso, "Thermal Treatment and Depth Profile Studies of Thin-Film Carborane-Based Amorphous Hydrogenated Boron Carbide Grown by Plasma-Enhanced Chemical Vapor Deposition", *Thin Solid Films*, submitted.

71. Bradley J. Nordell, Christopher L. Keck, Thuong D. Nguyen, A. N. Caruso, Sudhaunshu S. Purohit, William A. Lanford, Dhanadeep Dutta, David Gidley, Patrick Henry, Sean W. King and Michelle M Paquette, "Tuning the Properties of a Complex Disordered Material: Full Factorial Investigation of PECVD-Grown Amorphous Hydrogenated Boron Carbide", *Materials Chemistry and Physics*, submitted.

72. Bradley J. Nordell, Thuong D. Nguyen, Christopher L. Keck, Shailesh Dhungana, A. N. Caruso, William A. Lanford, John T. Gaskins, Patrick E. Hopkins, Devin Merrill, David C. Johnson, Liza L. Ross, Patrick Henry, Sean W. King and Michelle M. Paquette, "Conquering the Low-k Death Curve: Insulating Boron Carbide Dielectrics with Superior Mechanical Properties", *Nature Materials*, submitted.

Major Technical Reports (limited access/distribution)

1. A.N. Caruso, "NDSU Micro Isotope Power Sources Final Report for HR-0011-06-C-0143", MAR 2010 (Distribution Statement B). DTIC Accession No. ADB328150

2. T.M. Oakes, W.H. Miller, S.L. Bellinger, T.J. Sobering, J.K. Shultis, R.G. Fronk, B.W. Cooper, P.B. Ugorowski, D.S. McGregor, S.L. Jackson, J.C. Zier, D.P. Murphy, B.V. Weber, J.W. Schumer, R.J. Commisso, E.R. Myers, P.S. Scott and A.N. Caruso, "Solid State Neutron Spectrometer: FY11 ONR-MWMDD Final Report", UMKC-0001AF-TR-2011, APR 2012 (U // FOUO / Export Controlled / Distribution Statement F). DTIC Accession No. ADB382066

3. E.R. Myers, C.B. Hoshor, B.J. Rogers, P.S. Scott, W.H. Miller, S.L. Bellinger, T.J. Sobering, D.S. McGregor, S.L. Jackson, J.C. Zier, J.P. Apruzese, B.V. Weber, J.W. Schumer, R.J. Commisso, C.S. Gwon, M.S. Strickman, R.S. Woolf, B.F. Phlips, W.N. Johnson and A.N. Caruso, "Solid State Neutron Spectrometer: FY12 ONR-MWMDD Final Report", UMKC-0001AP-TR-2012, FEB 2013 (U // FOUO / Export Controlled / Distribution Statement F). DTIC Accession No. ADB390506

4. J.S. Schumer, A.N. Caruso, Z.W. Bell, B.F. Phlips, R.A. Kroeger and R.J. Commisso, "Proceedings of the ONR Gamma and Neutron Background Workshop (1-2 Feb 2012)", NRL Memorandum Report, 2013 (Distribution Statement C).

5. P. Winters, MJ Bieberich, B. Philips, E. Wulf, W. Neil Johnson, M. Strickman, Z. Bell, D. Archer, D. Hornback, C. Kline, R. Forgas, D. Workman, E. Myers, P. Scott, A. Caruso, W. Miller, S. Bellinger, T. Sobering, D. McGregor, R. Kroeger, "Results of the Office of Naval Research Sponsored Maritimed WMD Detection Nuclear Threat Assessment (MANTA) Test Campaign", MAY 2013, NSWCCD-63-TR-2013/55 (Distribution Statement C).

6. C.B. Hoshor, E.R. Myers, J.E. Currie, J.A. Crow, P.S. Scott, T.M. Oakes, W.H. Miller, S.L. Bellinger, T.J. Sobering and D.S. McGregor, S.L. Jackson, J.C. Zier, J.P. Apruzese, J.W. Schumer, and R.J. Commisso and A.N. Caruso, "Solid State Neutron Spectrometer: FY13 ONR-MWMDD Final Report", UMKC-0002AF-TR-2013, APR 2014 (U // FOUO / Export Controlled / Distribution Statement B). DTIC Accession No. ADB399058

7. J.A. Crow, J.B. Lancaster, P.E. Evans, and A.N. Caruso, "Tuning Solids for RF Transmission: FY14/15 ONR-CDEW Final Report", UMKC-CDEW-TR-2013, 29 MAY 2015 (U // Distribution Statement C).

8. C.B. Hoshor, E.R. Myers, B.J. Rogers, S.M. Young, J.E. Currie, J.A. Crow, S.L. Bellinger, T.J. Sobering and D.S. McGregor, and A.N. Caruso, "Solid State Neutron Spectrometer: FY14 ONR-MWMDD Final Report", UMKC-0001AM-TR-2014, JUN 2015 (U // FOUO / Export Controlled / Distribution Statement C).

Issued / Allowed Patents

1. Peter A. Dowben, Anthony N. Caruso, and Yaroslav Losovyj, "N-type boron-carbide semiconductor polytype and method of fabricating the same," USPTO No. 6,774,013, issued 10 AUG 2004. online

2. Anthony N. Caruso, Peter A. Dowben, and Jennifer I. Brand, "Boron Carbide Particle Detectors," USPTO No. 7,368,794, issued 02 MAY 2008. online

3. Anthony N. Caruso, David A. Bunzow and Joseph Sandstrom, "Amorphous boron carbide films for p-n junctions and method for fabricating the same", USPTO No. 8,237,161, issued 07 AUG 2012. online

4. Anthony N. Caruso, Michael W. Kelly, Daniel Leon Salas, Sridhar Reddy Vanja and Thomas C. Caruso "Apparatus and system for low voltage direct current at industrial power recharging of hybrid high occupany capacity on-road transportation vehicles," submitted May 20th, 2009, United States Provisional No. 61/216,969. Non-provisional filed, May 18th, 2010, USPTO 12/800,827. USPTO No. 8,839,890 issued 23 SEPT 2014. online

5. Steven L. Bellinger, Anthony N. Caruso, Brian Cooper, William L. Dunn, Ryan G. Fronk, Douglas S. McGregor, William H. Miller, Eliot R. Myers, Thomas M. Oakes, Phil B. Ugorowski, John K. Shultis, Tim J. Sobering, "Apparatus and Method for Determination of One or More Free Neutron Characteristics", USPTO Provisional No. 61/198,413, filed 27 OCT 2011. Non-provisional filed 29 OCT 2012 under 37 CFR 5.2, USPTO Appl. No. 13/694,104. Continuation filed 19 MAY 2015 under 37 CFR 5.2, USPTO Appl. No. 14/716,678. UPSTO No. 9,081,100 issued 14 JUL 2015. online

Pending Non-Provisional Patent Applications

1. Anthony N. Caruso, James Petrosky, John McClory, Peter A. Dowben, William H. Miller, Thomas Oakes and Abigail Bickley, "Apparatus and Method for Directional and Spectral Analysis of Neutrons", submitted August 20th, 2009, UM Disclosure Nos. 10UMK001 and 10UMK002, United State Provisional No. 61/274,753 and 61/274,752. Non-provisional filed, August 19th, 2010 as PCT/US10/46188, World-patent application published Feb. 24th, 2011 as WO 2011/022663 A1. PCT abandoned; US Application in appeal. online

2. Steven L. Bellinger, Anthony N. Caruso, Brian Cooper, Joseph A. Crow, James B. Currie, G. Fronk, Cory B. Hoshor, Douglas S. McGregor, William H. Miller, Eliot R. Myers, Thomas M. Oakes, Brent J. Rogers, Phil B. Ugorowski, John K. Shultis, Stephan Young "Apparatuses and Methods for the Identification of Neutron Sources and/or Neutron Shielding Materials", UM Disclosure No. 14UMK012, USPTO Provisional No. 61/966,878, filed 05 MAR 2014 (Docket No. UMKC 14-1-1). USPTO Non-Provisional filed 05 MAR 2015 under 37 CFR 5.2, USPTO Appl. No. 14/544,924.

Active Provisional Patents and Invention Disclosures

1. Brent Rogers, Cory Hoshor, Eliot Myers and Anthony Caruso, "Handheld Radiation Monitor Replacement", UM Disclosure No. 13UMK009, 10 FEB 2013.

2. Cory Hoshor, Eliot Myers, Stephan Young, Brent Rogers, and Anthony Caruso, "Moderating Type Neutron Spectrometer Improvements", UM Disclosure No. 14UMK00X, 17 FEB 2014.

3. Michelle Paquette, Brad Nordell, Sean King, and Anthony Caruso, "Amorphous Hydrogenated Boron Carbide Films for Low-Dielectric-Constant Diffusion Barrier/Etch Stop Layer in Copper Interconnects and Method for Fabricating Same", UM Disclosure No. 14UMK030, 03 JUN 2014, USPTO Provisional No. 62/178,320.

4. Anthony Caruso, Cory Hoshor, James Currie, Stephan Young, Joseph Crow, and William Miller, "Enhancing gamma-ray spectroscopic resolution by response function fusion", UM Disclosure No. 14UMK037, 15 JUN 2014.

Abandoned Disclosures, Provisional and Non-Provisional Patents

1. Douglas Lloyd Schulz, Robert A. Sailer, and Anthony Nicholas Caruso, "Superparamagnetic Cobalt Iron Oxygen Nanoparticles," Intl. Appl. No. PCT/US2007/006164, Pub. No. WO/2007/108980, abandoned OCT 2012.

2. Anthony N. Caruso and Scott R. Messenger, "Reduced-Defect High-Efficiency Silicon-Based Betavoltaic with 147-Pm", UM Disclosure No. 09UMK004.
3. Anthony N. Caruso and Scott R. Messenger, "Method for enhancing the overall efficiency for an alphavoltaic or betavoltaic power source", UM Disclosure No. 09UMK007.

Books, Book Chapters, and Review Articles

1. A.N. Caruso and C.N. Borca, "The Possible Influence of Magnetic Ordering on Segregation in Ternary Alloys: TiCoSb and NiMnSb," *Recent Developments in Magnetism and Magnetic Materials* **1** (2003) 33–48, Transworld Research Network.

2. Hae-Kyung Jeong, Anthony Caruso and Camelia Borca, "Surface Segregation and Compositional Instability at the Surfaces of the Half Metallic Ferromagnets and Related Compounds," *Springer Series: Half Metallic Alloys - Fundamentals and Applications* **676** (2005) 221. http://dx.doi.org/10.1007/11506256_7

3. C.N. Borca, D. Ristoiu, Hae-Kyung Jeong, T. Komesu, A.N. Caruso, J. Pierre, L. Ranno, J.P. Nozieres, and P.A. Dowben, "Epitaxial growth and surface properties of half-metal NiMnSb films," *special issue on half-metallicity J. Phys. Cond. Matt.*, **19** (2007) 315211. DOI: 10.1088/0953-8984/19/31/315211

* Chosen by the Institute of Physics editorial board as a "Select" paper for August 2007.

4. J.P. Velev, P.A. Dowben, E.Y. Tsymbal, S.J. Jenkins, and A.N. Caruso, "Interface Effects in spin-polarized metal/insulator layered structures," *Surface Science Reports* **63** (2008) 400. http://dx.doi.org/10.1016/j.surfrep.2008.06.002

5. A.N. Caruso, "The Physics of Solid State Neutron Detector Materials and Geometries", *J. Phys. Cond. Matt.* **22** (2010) 443201. http://dx.doi.org/10.1088/0953-8984/22/44/443201

6. Andrew P. Weber, Paul M. Rulis, Michelle M. Paquette, Konstantin I. Pohkhodyna, Saad Z. Janjua, and Anthony N. Caruso, "Understanding Magnetic Exchange in Molecule-Based Magnets from an Electronic Structure Point-of-View", in *Handbook of Nanomagnetism Applications and Tools*, Edited by R. A. Lukaszew (Pan Stanford, 2015). ISBN 978-981-4613-04-0

E. Teaching Experience

Graduate Faculty

Fellow of the Graduate and Doctoral Faculty, University of Missouri – KC, Fall 2007 – present
Fellow of the Graduate School, North Dakota State University, Fall 2006–2007

Courses Taught

Undergraduate Quantum Mechanics – Union College, Lincoln, NE
Foundations of Physical Sciences – UMKC PHYS 110L
Physics of Electronics – UMKC PHYS 385L / 5585
Computer Interfacing – UMKC PHYS 395L / 5595
Physics for Future Presidents – UMKC PHYS 171

Graduate Students Supervised, Supervising, and their Present Locations

Pamela Jeppson (NDSU 2006 – $CoFeO_x$ Magnetic Nanoparticle Apps – Univ. Neb.)
Bridger Anderson (NDSU 2007 – All Organic Magnetic Tunnel Jcts. – Innovative Microtech)
Marshall Bremer (NDSU 2007 – Magnetic Frustration in Hex Lattices – Michigan State)

M.S. Driver (UMKC MS 2008, iPhD 2013 – Boron Carbide Defects & Elec. Struct., UNT)
D.-H. Yeon (UMKC MS 2009 – Plasma Growth of Boron Rich Compounds, Hitachi Korea)
S. J. Janjua (UMKC MS 2009 – Mag. Exchange M[TCNE] Magnets, DoD Cont. Virginia)
S.R. Vanja (UMKC MS 2008, UMKC PhD Track – Enhanced Energy Sharing Hy. Vehicles)
Hao Ding (UMKC MS 2010 – Non-Linear Magnetic Permeability, now at NYU)
Brad Nordell* (UMKC PhD Candidate – Application of a-$B_5C:H_x$ as an Interlayer Dielectric)
Andrew P. Weber (UMKC PhD 2015 – Novel Magnetic Exchange Pathways – Swiss Light)
Thomas M. Oakes*** (UM-Columbia PhD 2012 –Spectrometer Calculations - Sandia)
Eliot R. Myers (UMKC MS 2015 – Prompt Neutron Spectrometry – Spear Power Systems)
Cory B. Hoshor (UMKC PhD Track – Improved Unfolding Techniques)
Brent Rogers (UMKC MS 2015 – High Pressure ^{3}He Neutron Detector Replacement)
Chris Keck* (UMKC MS 2015 – Mobility Measurements in High Resistivity Solids)
Justin Hurley* (UMKC MS 2015 – Photoconductivity of High Resitivity Solids)
Gyanendra Bhattarai* (UMKC PhD Track – Impedance Character of Amorphous Dielectrics)
Shailesh Dhungana* (UMKC PhD Track – Uranium Oxide Semiconductors)
John Lancaster** (UMKC PhD Track – Tuning Solids for RF Transmission)
Noah Kramer* (UMKC MS Track – Photoconductive Solid State Switches)
Michael Richman**** (UMKC iPhD Track – CDEW Phenomenology)

Undergraduate Students Supervised

Munir Kaderbhai (2006 – application of Simmons rules to Organic MTJ's)
Tom Scott (2007: x-ray photoemission spectroscopy)
David Rinck (2008: magnetic hyperthermia)
Ben Walker (2008: x-ray photoemission spectroscopy)
Arthur Pemberton (2008: wrote code for multichannel IV test station)
Eliot Myers (2009-2011: high current switching)
Lokesh Bindal (2009: GEANT modeling of neutron tracks)
Murali Padala (2008-2010: general equipment repair)
Adam Clark (2009-2010: machinist, touched every project)
Royce Hams (2009: electromagnet design, construction and testing)
Chad Clayton (2009-2011: high resistivity Hall)
Sudarshan Karki* (2008-2011: boron carbide magnetron sputtering)
John Kingsley (2010-2012: plug-in hybrid vehicle prototype)
Ren Dickson (2011-2015: 3D drawings, construction, dose calculations)
Brett Whisler (Summer 2012: portable neutron spectrometer testing)
Brent Rogers (2012: wire bonding, digital signal processing)
Chris Keck* (2012: resistivity, Hall and optical profilometer build)
Thuong Nguyen* (2012-present: properties of PECVD grown boron carbide)
Justin Hurley* (2013-2014: photoconductivity of PECVD grown boron carbide)
Aaron Kruger (Summer 2013: velocity dependent ROC curves and thermal noise)
Stephan Young (2013-2015: neutron spectrometry, response function fusion and unfolding)
Prescott Evans** (2015: network vector analyzer measurements and microwave reflection)

* Co-advised with Res. Prof. Michelle M. Paquette
** Co-advised with Postdoctoral Fellow Joseph A. Crow
*** Co-advised with Prof. William Miller
**** Co-advised with Prof. Paul Rulis

Invited Presentations

1. "A comparison of Surface Segregation for two semiHeusler Alloys: TiCoSb and NiMnSb," May, 2002, Center for Microstructures and Devices Seminar, LSU.

2. "A comparison of Surface Segregation for two semiHeusler Alloys: TiCoSb and NiMnSb," July 4, 2002, 9th annual International Conference on Composite Engineering, San Diego, CA; published abstract: A.N. Caruso, C.N. Borca, P.A. Dowben, D. Ristoiu and J.P. Nozieres, ICCE 9 Conference Proceedings (2002) 99–100.

3. "n-type boron carbide," Physical Electronics Conference, Madison, WI, June 22nd, 2005, Nottingham Prize Competition Finalist Talk.

4. "An Introduction to Spintronics," Sept. 28th, 2005, North Dakota State University Physics Colloquium, Fargo, ND.

5. "An Introduction to Spintronics," November 4th, 2005, Univeristy of North Dakota Physics Colloquium, Grand Forks, ND.

6. "An Introduction to Spintronics", November 11th, 2005, Moorhead State University Physics Colloquium, Moorhead, MN.

7. "Organic Spintronics?" June 9th, 2006, Brookhaven National Laboratory, National Synchrotron Light Source, Colloquium Series, Upton, NY.

8. "Toward Organic Spintronics?" June 26th, 2006, DARPA Review, Santa Monica, CA.

9. "The Case for Unique Magnetically Sensitive Spectrscopies from a High Brightness Synchrotron Radiation Source," November 20th, 2006, Advanced Scientific Capabilities in the South Workship, Louisiana State University, Baton Rouge, LA.

10. "Metallicity and Magnetism in Organic-based Solids," February 2nd, 2007, University of Missouri – Kansas City, Physics Colloquium, Kansas City, MO.

11. "Metallicity and Magnetism in Organic-based Solids," February 6th, 2007, Virginia Commonwealth University, Physics Colloquium, Richmond, VA.

12. "Boron Carbide Alphavoltaic Batteries," March 20th, 2007, National Renewable Energy Laboratory, General Seminar, Golden, CO.

13. "Boron Carbide Alphavoltaic Batteries," April 4th, 2007, Rensselaer Polytechnic Institute, Materials Science and Engineering Colloquium, Troy, NY.

14. "Metallicity and Magnetism in Organic-based Solids," April 5th, 2007, Rensselaer Polytechnic Institute, Physics Colloquium, Troy, NY.

15. "Neutron Calorimetery Using Boron Carbide Heterojunction Diodes," May 9th, 2007, National Institue of Standards and Technology, Gaithersburg, MD.

16. "Semiconducting Boron Carbide: From Nuclear Batteries to Neutron Detection," June 20th, 2007, Brookhaven National Laboratory, Upton, NY.

17. "The Elegant Honeycomb: A Geometrically Inspired Moment from a Mn(II) Antiferromagnet with Exotic Transition Behavior," July 16th, 2007, Oak Ridge National Laboratory - Organic Magnetism Symposium, Oak Ridge, TN.

18. "Molecular Magnetism: An Electronic Structure Approach," November 15th, 2007, University of Missouri – Rolla, Physics Colloquium, Rolla, MO.

19. "Caruso Boron-rich Solids: Past, Present and Future Electronic Structure," June 2nd, 2008, Kansas State University, Midwest Boron Mini-Symposium, Manhattan, KS.

20. "Thermoelectric Applications: The Role of Boron-Rich Solids," June 18th, 2008, North Dakota State University, Fargo, ND.

21. "Some Electronic Properties of Low Temperature Deposited Amorphous Boron Carbide," September 3rd, 2008, 4th Intl. Workshop on Spinel Nitrides and Related Materials, Rudesheim, Germany.

22. "Organic-based Magnetoelectronics from an Electronic Structure View," October 21st, 2008, Annual Meeting of the American Vacuum Society, Magnetic Interfaces and Nanostructures Division, session M13+NC (Organic Spintronics and Magnetic Sensors).

23. "Solid State Neutron Detection," April 10th, 2009, University of Missouri – Kansas City, Physics Colloquium, Kansas City, MO.

24. "Next Generation Neutron Detection for Next Generation Nuclear Reactors," April 23rd, 2009, Missouri Energy Summit, Columbia, MO.
25. "Advances in a-$B_5C:H_x$, solid state neutron detection and nuclearvoltaics," July 31st, 2009, University of Nebraska – Lincoln, Mini Symposium on Solid State Neutron Detection.

26. "Introduction to Solid State Neutron Detection," August 14th, 2009, North Dakota State University Colloquium, Fargo, ND.

27. "High Efficiency Fast Neutron Detection by a Solid State Direct Conversion Heterostructure," August 20th, 2009, Maritime-Weapons of Mass Destruction – Detection for the Office of Naval Research at the Naval Research Laboratory, Washington, DC.

28. "High Efficiency Solid State Neutron Detector", Sept. 20th, 2010, Oak Ridge National Laboratory, Oak Ridge, TN. [FOUO/ITAR/Distro F]

29. "Introduction to Solid State Neutron Detection and Spectrometry", Nov. 18th, 2010, Missouri State University Colloquium, Springfield, MO.

30. "Solid State Neutron Spectrometer: Introduction and Dosimetry Considerations", March 31st, 2011, Naval Surface Warfare Center – Carderock, Bethesda, MD.

31. "Neutrons-to-Nihilism: Implications from the left hemisphere", May 8th, 2011, Center for Free Thought, Kansas City, MO.

32. "Solid State Neutron Spectrometer", August 16th, 2011, Maritime-Weapons of Mass Destruction – Detection for the Office of Naval Research at Eglin AFB, Valparaiso, FL. [FOUO/ITAR/Distro F]

33. "(Mostly) Open Source Assessment of the Passive Maritime Neutron Background", 01 FEB 2012, Naval Research Laboratory, Washington DC. [FOUO/ITAR/Distro C]

34. "FY12 ONR M-WMD-D Manta Test Campaign VIP Review: Solid State Neutron Spectrometer Results", 13 SEPT 2012, West Bethesda, MD. [FOUO/ITAR/Distro F]

35. "ONR M-WMD-D Solid State Neutron Spectrometer Briefing for OPNAV N96CN CBRN", 10 DEC 2012, Pentagon, Washington, DC. [FOUO/ITAR/Distro F]
36. "Solid State Neutron Detector Implementation Overview for Navy Missions", 05 FEB 2013, Marine Corp Warfighter Laboratory, Quantico, VA. [FOUO/ITAR/Distro F]

37. "MSND-based Instruments for Navy Missions", 05 FEB 2013, Defense Threat Reduction Agency Contingency Operations Division (DTRA-ONC), Ft. Belvoir, VA. [FOUO/ITAR/Distro F]

38. "Opportunities in Physics – Caruso Perspective", 18 FEB 2013, Math and Physics Institute, Independence, MO.

39. "Moderating Type Solid State Neutron Spectrometer", 20 MAY 2013, Johns Hopkins Applied Physics Laboratory, Laurel, MD. [FOUO/ITAR/Distro F]

40. "Portable Neutron Detection and Spectroscopy", 13 NOV 2013, Tulane Department of Physics and Engineering Physics, New Orleans, LA.

41. "Moderating Type Semiconductor-based Neutron Spectrometer", 16 DEC 2013, Rapiscan Systems Inc., Sunnyvale, CA. [FOUO/ITAR/Distro F]

42. "Alternative Degrees-of-Freedom for RN Detection", 26 MAR 2014, VIP Global Net Radiation Detection Symposium, Fairfax, VA.

43. "Solid-State Neutron Detectors and Instrumentation: New Challenges and Potential Opportunities", 17 NOV 2014, Radiation Technical Group Series, Naval Surface Warfare Center – Carderock Division, West Bethesda, MD. [Distro C]

44. "Tuning Solids for RF Transmission", ONR Briefing, Vencore, Arlington, VA. [Distro B]

45. "Portable Neutron Spectrometer", 12 MAY 2015, DTRA J9 Breifing, Kansas State Univeristy, Manhattan KS. [FOUO / ITAR / Distro B]

Contributed Presentations

1. "Comparison of Surface Segregation for two semi-Heusler alloys: TiCoSb and NiMnSb," March 22, 2002, March Meeting of the American Physical Society 2002, Indianapolis, IN, abstract W20-7, Bulletin of the American Physical Society 47 (2002) 1217.

2. "Comparison of Surface Segregatio for two semi-Heusler alloys: TiCoSb and NiMnSb," April 2002, Sigma Xi paper competition, Lincoln, NE, competition talk runner up.

3. "Comparison of the Decomposition of Metacarborane and Orthocarborane," AVS 49th International Symposium, Denver, CO, November 6, 2002, paper #EL+SC-WeP2.

4. "Substrate Dependent Bonding of Chemisorbed 1,1'-Biphenyl-4,4'-Dimethanethiol," Spring MRS 2003, San Francisco, CA, paper P6.12.1.

5. "The Isomer Dependent Semiconductors of Boroncarbide," AVS 50th International Symposium, Baltimore, MD, November 4, 2003, paper #MI-WeP15.

6. "Organic Insulators on Gold and Cobalt," The 64th Physical Electronics Conference, University of California at Davis, July 21, 2004.

7. "The Implications of Semiconducting Boron Carbide," The SPIE Annual Conference, Denver, Colorado, August 4th, 2004.

8. "The Interface Electronic Structure of Thiol Terminated Molecules on Metals," AVS 51st International Symposium, Anaheim, CA, November 16th, 2004, paper #SS2-TuM8.

9. "Ferromagnetism of a Co-porphyrin Supramolecular Assembly," Spring Meeting of the Materials Research Society, San Francisco, CA, April 20th, 2006, paper Q6.7.

10. "A New Class of Organic-based Magnet with Remnant Moment above Room Temperature: Mn(II)chalcogenocarboxylate," International Conference on Molecular Magnetism, Victoria, British Columbia, Canada, August 15th, 2006, paper 0179.

11. "Organic-based Materials in Spintronics," 53rd International American Vacuum Society Symposium, San Francisco, CA, November 16th, 2006, paper MI+EM-ThM6.

12. "A Direct Conversion Boron Carbide Diode Battery," July 25th, 2007, DARPA/MTO Symposium, Long Beach, CA.

13. "Direct Conversion Nuclear Voltaics: Radiation Hardness," July 23rd, 2008, DARPA/MTO Symposium, Vail, CO.

14. "Spin polarized electronic structure considerations from the organic-based magnet $[Fe^{II}(TCNE)(NCMe)_2][Fe^{III}Cl_4]$," Sept. 23rd, 2008, International Conference on Molecular Based Magnetism, Florence, Italy.

15. "Core and Valence Band Photoemission of M[TCNE] Organic-based Magnets", Nov. 12th, 2009, 56th AVS Symposium, San Jose, CA.

16. "The Spin Dependent Near Fermi-Edge Structure of M[TCNE] Magnets", Mar. 16th, 2010, APS March Meeting, APS GMAG – J33.00005, Portland, OR.

17. "The Spin-Resolved Electronic Structure of the Strongly Correlated $M^{II}[TCNE]^{\bullet-}$ Magnets", October 19th, 2010, 57th AVS Symposium, MI+EM-TuA, Albuquerque, NM.

18. "High Efficiency Solid State Neutron Detector and Spectrometer", Oct. 28th, 2011, HE2 ^{3}He Alternatives for Neutron Detection II, Valencia, Spain.

19. "High Intrinsic Efficiency Solid State Neutron Detector and Spectrometer", Nov. 2nd, 2012, talk HE-2-7, in Perspectives on 3-He replacements for Neutron Detection II, Anaheim, CA.

20. "Fusion of Photon-Neutron Spectroscopies", Nov. 10th, 2014, poster N09-30 in Instrumentation on Nuclear Security Applications, Seattle, WA.

G. Synergistic Activities and Societies

Membership:

American Physical Society (2002-2013); American Vacuum Socity (2000-2013); Materials Research Society (2002-2007); IEEE (2012 – present); Sigma Xi (2003-2005); Phi Kappa Phi [186-387-922] (2012-2015).

Service:

UM System Patent Committee (2015 – present)
UMKC Tech Transfer Advisory Committee (2015 – present)
UMKC Radiation Safety Committee Chair (2013 – present)
UMKC Research Advisory Council (2013 – present)
Underwater Robotics Coach and Sponsor (2014 – present)
UMKC Chess Team Faculty Sponsor (2012 – present)
NSLS II ESM Beamline Advisory Team (2012 – present)
UMKC Physics Graduate Advisor (2012 – 2014)
Synchrotron and Neutron Users Group – DoE NSLS Constituent (2007)
UMKC Physics Curriculum Committee Chair (2008-2011)
UMKC Physics Undergraduate Recruitment Committee (2008-2010)
AVS Magnetic Interfaces and Nanostructures Division (Treasurer 2009, Chair-Elect 2010, Chair 2011, Secretary and Chair-Emeritus 2012, Secretary 2013)
National Synchrotron Light Source Special Interest Group Surface Science and Photoemission Representative (2009-2010)
APS Topical Group on Magnetism (2010 Organic Magnetism Session Organizer)
UMKC College of Arts & Sciences Academic Standards Committee (2009-2012)
UMKC Innovation Center Advisory Council (2011-2012)

UMKC Radiation Safety Committee General Member (2011-2013)
2012 NSLS/CFN Joint Users' Meeting: Workshop 1 - Organic Materials at Nanoscale: Physics and Applications (Co-Organizer)
Gamma and Neutron Background Workshop, Naval Res. Lab. (Co-Chair) 2012

Journal Reviewer:

Nuclear Instrument and Methods in Physics Research A, Thin Solid Films, Journal of Physical Chemistry, Journal of Vacuum Science and Technology, Chemistry of Materials, Materials Letters, Journal of Physics and Chemistry of Solids, Chemical Physics Letters, Journal of Physics D: Applied Physics, Surface Science, New Journal of Physics, Journal of Physics: Condensed Matter, Physical Review B, Physica Status Solidi B, Metallurgical and Materials Transactions A, Chemosensors, Journal of Crystal Growth, IEEE Transactions on Nuclear Science, Sensors.

Proposal Reviewer:

Defense Threat Reduction Agency, National Science Foundation, University of Missouri Research Board, University of Missouri – IDIC, American Chemical Society, DoE-NNSA, DoE-NEUP, DoE-SBIR.

Editorship:

Associate Editor for the IEEE Transactions on Nuclear Science (2012 - present)

Consulting:

Semiconductor-based neutron detection, directed energy, and counter-directed energy.

Board Membership:

Undisclosed tech companies.

Major Accomplishments at Assistant Vice Chancelor for Research:

- conceived of and helped execute on first faculty research symposium (DEC 2014)
- conceived of and developed white paper/non-technical service for faculty (APR 2015)
- helped to reestablish and develop internal faculty research program (SEPT 2014)
- conceived of and helped to execute on research capabilities/services listing (NOV 2015)
- stood up Chemical Safety Committee (NOV 2015)
- initiated Chem/Bio Defense Group (OCT 2014)
- initiated master service/collaboration agreements with major industry/gov partners

H. Research Interests

Advanced methods for high efficiency direct conversion solid state neutron detection, and advanced concepts in neutron scattering for moderating type neutron spectrometry and related applications. Metallicity, magnetism and their intimate relationship in organic-based solids. Electronic and magnetic phase transistions; correlated electronic phenomena; unconventional mediation for magnetic exchange. Using quantitative information from electron spectroscopies to understand and control the above mechanisms in organic-based solids. Controlled transmission of microwaves from surfaces using tuned complex permittivity and permeability.

I. Proposals

Funded Proposals

1. (Role: PI) "Understanding Actinide Magnetism," submitted to Los Alamos National Laboratory Seaborg Institute, October 26th, 2004 for $64,000. Status: Awarded, PI declined to accept for other position.

2. (Role: Co-PI) "Development of Ferromagnetic Materials Toward Spintronic Applications," submitted to DARPA DSO under BAA05-19, March 29th, 2005 for $450,000. Status: Awarded for $450,000, Grant No. DMEA-90-02-2-0218, closed Fall 2006.

3. (Role: PI) "A Direct Power Conversion Alphavoltaic Boron Carbide Diode Battery," submitted to DoD DARPA under MIPS: Micro Isotope Power Sources under BAA 06-25, May 2nd 2006 for $3,551,944. Status: awarded Phase I for $1,182,109, Phase II for $928,576, Phase III for $998,000, Phase III/IV Bridge Funding $40,000. Contract No. HR0011-06-C-0143. Status: Closed out, Nov. 2009.

4. (Role: subawardee) "The Electronic Properties of a-Si by Ultraviolet Photoemission," submitted through North Dakota State University (Prime) to the Defense Microelectronics Activity (DMEA) for $32,858 over 6 months on February 25th, 2008. Status: Awarded at $32,858. Closed out, Dec. 2009.

5. (Role: PI) "Vibrating Sample Magnetometer Instrument Acquisition," submitted to the University of Missouri – Research Board, October 6th, 2008 for $49,300 over 1 year. Status: Awarded for $10,000. Closed out, Jan. 2010.
6. (Role: PI) "Commercialization of Direct Conversion Betavoltaic Batteries," submitted, October 6th, 2008 for $50,000 to the Univ. MO Intellectual Property Fast Track Initiative for a one year period. Status: Awarded $50,000. Closed out, Jan. 2010.

7. (Role: subawardee) "^{244}Cm Thermoelectric Demonstration," awarded July 14th, 2009 for $239,752 from the Research Triangle Institute for five months. Status: Awarded $239,752. Closed out, Jan. 2010.

8. (Role: PI) "High Efficiency Solid State Neutron Detector", submitted August 20th, 2009, Maritime-Weapons of Mass Destruction – Detection Program with the Office of Naval Research. Status: Awarded, at $293,722, Grant No. N00014-10-1-0419. Closed out, Oct. 2010.

9. (Role: Co-PI) "FRG: Bonding and Magnetic Exchange in the metal-[TCNE] Magnet Family," submitted to the National Science Foundation on Oct. 30th, 2009 for $524,193 under NSF-MPS-DMR-CMP. Status: Awarded Sept. 10th, 2010 for $262,096, NSF-DMR-1005882. Closed out, Feb. 2013.

10. (Role: PI) "Investigating Electron-Hole Pair Creation and Lifetimes in Amorphous Hydrogenated Boron Carbide," submitted to the American Chemical Society – Petroleum

Research Fund (ACS-PRF) under the Doctoral New Investigator call, for $100,000 over two years on 10/30/09. Status: Awarded in full, PRF-50444-DNI10. Closed out, SEPT 2013.

11. (Role: PI) "Understanding the Electronic Structure of the a-B_5C:H_x-to-Metal Interface," submitted to DoD DTRA BRCMWD HDTRA1-08-10-BRCWMD-BAA (period 4), October 30th, 2009 for $100k/yr for two years. Status: Full proposed invited for submission, Feb. 22nd, 2010; full proposal awarded at $198,736, Grant No. HDTRA1-10-1-0092. Continuation for FY13/FY14 option years submitted to the Defense Threat Reduction Agency BRCWMD Amendment 7 call on Oct. 22nd, 2011 for $200,000 over 8/12 – 8/14. Status: awarded in Spring 2012 for $198,000. Continuation for FY15 option years submitted 04 DEC 2013 for $100,000 over 8/14 – 8/15. Status: awarded in full. Closed out, AUG 2015.

12. (Role: PI) "MRI: Acquisition of a High Energy Resolution Angle Resolved Spin Polarized Photoemission and Preparation Instrument," submitted to the National Science Foundation Major Research Instrumentation NSF-MRI-10-529, April 21st, 2010 for $712,989 over two years. Status: funded, October 1st, 2010 for $643,289, NSF-DMR-1039673. Closed out in OCT 2012.

13. (Role: Co-PI on massive Multi-investigator earmark) "Development of New Hybrid Polymeric Materials", submitted to the Army Research Office, April 20th, 2010 for $698,400. Status: awarded for FY10; Caruso share - $25,400. Grant No. W911NF-10-1-0476. Closed out.

14. (Role: PI) "High Efficiency Solid State Neutron Detector", submitted Sept. 25th, 2010 to the Maritime-Weapons of Mass Destruction – Detection Program within the Office of Naval Research for $649,999. Status: Awarded, at $400,000, Grant No. N00014-1-11-0157. An expansion of this grant was submitted for $325,000 and awarded in July of 2011 for a total of $725,000. Another expansion was submitted for $190,000 and awarded in October 2011 for a total of $915,000 on this award. Another expansion was submitted in November 2011 for $300,068 and was awarded February 2012 for a total of $1,215,068 on this award. Another expansion was submitted in August 2012 for $230,000 and was awarded in January and June 2013 increments for a total of $1,615,068 on this award. Another expansion was submitted in August 2013 for $239k and was awarded in December of 2013 for a total of $1,854,068 on this award. Closed out, JUL 2015.

15. (Role: PI) "High Efficiency Solid State Neutron Detector Demonstration", submitted October 10th, 2010 to the Maritime Weapons of Mass Destruction Detection Program within the Office of Naval Research, Code 351, for $98,000. Status: Awarded at $98,000, Contract No. N00014-11-M-0041. An additional $50,000 was submitted and is pending as of June 6th, 2011. The additional $50,000 was awarded for a total of $148,000. Closed out, APR 2012.

16. (Role: PI) "Solid State Neutron Spectrometry", submitted June 6th, 2011 to the Maritime-Weapons of Mass Destruction – Detection Program within the Office of Naval Research

via ONR 11-001 Amnd. 5, for $84,632. Status: awarded in full, December 2011, Contract No. N00014-12-M-0051. Closed out, MAR 2013.

17. (Role: PI) "Prompt Neutron Spectrometry for Identification of SNM in Unknown Shielding Configurations", submitted to the Office of Naval Research – Young Investigator Program ONR-BAA 11-030 for $675,434 over 01 APR 2012 to 31 MAR 2016. Status: Awarded in full: Grant No. N00014-13-1-0402.

18. (Role: Co-PI w/ Michelle Paquette) "Investigating PECVD amorphous hydrogenated boron carbide as a low-k dielectric material", submitted to the Semiconductor Research Corporation as Member-Specific-Research with Intel. for $374,613 over 01 JUL 2012 to 30 SEP 2015. Status: awarded in full: SRC Contract No. 2012-IN-2313.

19. (Role: PI) "Active Neutron Spectrometer", submitted 21 AUG 2012 to the Maritime-Weapons of Mass Destruction – Detection Program within the Office of Naval Research via ONR 12-001 Amnd. 2, for $100,000. Status: awarded in full, contract number N00014-13-P-1017. Closed out, APR 2014.

20. (Role: PI) "Neutron Generator System for Warm and Fast Energy Neutron Interrogation", submitted to the ONR FY13 DURIP PA-AFOSR-2012-0004 for $282,680 for 12 months starting July 2013. Status: awarded in full, Grant No. N00014-13-1-0757.

21. (Role: PI) "Handheld Radiation Monitor Replacement Assessment", submitted to the Univ. Missouri Research Board Fastrack program for $49,993 on 18 FEB 2013. Status: awarded in full. Closed out, APR 2014.

22. (Role: PI) "Characterization of New Topological Insulators", submitted to Brookhaven National Laboratory for $39,124 for 18 months starting JUN 2013. Status: awarded in full, contract no. BNLPR004-3199126. Plus up funding awarded for 01 JUN 2013 to 30 SEPT 2014 at $12,314, for a total of $51,438 on this award. Closed out, JUN 2015.

23. (Role: PI) "High Pressure 3-He Replacement", submitted 05 AUG 2013 to the Maritime-Weapons of Mass Destruction – Detection Program within the Office of Naval Research via ONR 13-001, for $100,000. Status: awarded in full, APR 2014, Contract No. N00014-14-P-1115. Closed out, JUN 2015.

24. (Role: Co-PI) "Portable Neutron Spectrometer", submitted to the Defense Threat Reduction Agency SBIR DTRA133-003 for $150,000. Status: Phase I awarded in full to Radiation Detection Technologies, contract no. HDTRA1-14-P-005. UMKC is sub to RDT for $14,999. Phase II proposal submitted on 11 DEC 2014 for $750,000 ($190,000 to UMKC). Status: Phase II selected, contract pending.

25. (Role: Co-PI) "High Rep-Rate Photoconductive Silicon Switches", submitted to NAVY STTR 15.A-T023 on 18 FEB 2015, Phase I - $150,000 with RDT (Prime) and BAE Systems (UMKC subcontract for $45,000). Status: Awarded in full. ONR Contract No. N00014-15-P-1181.

26. (Role: Co-PI) "Urania-based Direct Conversion Neutron Detector", submitted to DTRA HDTRA-1-11-16-BRCWMD-BAA (Amendment 3 – DEC 2013), Phase I white paper submitted. Status: white paper recommended for full proposal. Full proposal submitted on 16 APR 2014. UMKC portion is $485,795. Status: funded.

27. (Role: PI) "Tuning Solids for RF Transmission", submitted to the ONR Counter Directed Energy Weapons Program for $700,000 from 01JAN2016 to 31DEC2018. Status: first year obligation funded. ONR Award No. N00014-16-1-2067.
28. (Role: PI) "Soft Ferroelectric Materials for CDEW Applications", submitted to the ONR Counter Directed Energy Weapons Program for $75,000 from 01JAN2016 to 31DEC2018. Status: base year obligated. ONR Contract No. N00014-P-xxxx.

Pending Proposals

1. (Role: Co-PI) "Compact High-Resolution Anger Camera for Neutron Imaging", submitted to 2015-NIST-NCNR-01 ($427k sub to UMKC) for 36 months on 17 APR 2015 (Prime – Kansas State University). Status: full proposal pending.

2. (Role: Co-PI) "Nuclear Science and Engineering Nonproliferation Research", submitted to DE-FOA-0001300 on 31 AUG 2015 for $25M (UMKC Portion $4.3M) for 60 months (Prime – Kansas State University). Status: full proposal pending.

Declined Proposals

1. (Role: PI) "Nano Science at the Macro Level: Fabricating and Understanding the Electronic, Magnetic and Optical Properties of Thin Films Made From Clusters," submitted to the Army Research Office under the MURI call BAA-05-017, August 9th, 2005 for $1,367,000. Status: Approved White Paper, Full Proposal Declined.

2. (Role: PI) "Controlling Room Temperature Plastic Magnets," submitted to NDEPSCoR under the call DoD BAA-W911NF-04-R-001, August 30th, 2005 for $792,000. Status: Declined.

3. (Role: PI) "NIRT: Metallicity and magnetic transition in nano-based-solids," submitted to NSF under NIRT: Active Nanostructures and Nanosystems, November 29th, 2005 for $1,588,619. Status: Declined.

4. (Role: PI) "Organic-based Honeycomb Magnetism: The Role of Carboxylate Mediation on Metallicity and Magnetism," submitted to NSF under NSF-MSP-DMR-CMP, Program 03-1710, November 3rd, 2006 for $276,838. Status: Declined.

5. (Role: Co-PI) "Solvothermal Synthesis of Organic Ferromagnets," submitted to NSF under NSF-MSP-DMR-SSC, Program 03-1762, November 3rd, 2006 for $256,329. Status: Declined.

6. (Role: PI) "NIRT: Electronic Structure based Endohedral Fullerene MRI Contrast Agents," submitted to NSF under NIRT: Active Nanostructures and Nanosystems, solicitation 06-595, November 15th, 2006 for $1,226,000. Status: Declined.

7. (Role: Co-PI) "NIRT: Nanoscale Organic-based Magnets," submitted to NSF under NIRT: Active Nanostructures and Nanosystems, solicitation 06-595, November 15th, 2005 for $1,335,000. Status: Declined.

8. (Role: PI) "DTRA: Basic Neutron Studies Toward Next Generation Radiological Interdiction," to be considered under Topic N: Chemical, Biological, Radiological, Nuclear, and High Explosives (CBRNE) Sciences in response to BAA HDTRA1-07-BRCWMD, submitted June 8th, 2007 for $250,000/yr for 3 years. Status: Invited Proposal based on White Paper Declined.

9. (Role: Co-PI) "ARI-LA: An Integrated Solid State System for Nuclear Detection," submitted to the joint National Science Foundation/Domestic Nuclear Detection Office call BAA 07-545, May 2nd, 2007 for $7,499,783. Status: Declined.

10. (Role: PI) "Low Temperature Magnetometer General User Tool," University of Missouri Research Board Special Opportunity, Submitted Oct. 1st, 2007 for $80k. Status: Declined.

11. (Role: Co-PI) "The Identification and Role of Defects in Amorphous Boron Carbide," submitted to the National Science Foundation (NSF) under MPS-DMR-CER during the open submission October window, November 2nd, 2007 for $244,493 over four years. Status: Withdrawn.

12. (Role: PI) "The Radiovoltaic Boron Carbide Diode Battery," submitted to the Disruptive Technology Office (DTO) under BAA – N61339-06-R-0034 white paper, "Small, Long-life Micropower Sources," October 30th, 2006 for $568,000. Status: Declined.

13. (Role: PI) "NNSA: Neutron Spectrometry based on Advanced Boron Carbide Semiconductor Devices," submitted to the National Nuclear Security Adminstration (NNSA) under PDP BAA 08, solicitation DE-AR52-07NA28115, June 29th, 2007 for $885,059 over 3 years. Status: Declined.

14. (Role: PI) "High Energy and Spatial Resolution Valence and Core Spin Polarized Angle Resolved Photoemission Instrument," submitted to the Office of Naval Research (ONR) under AFOSR-BAA-2007-09 for the Defense University Research Instrumentation Program (DoD-DURIP), August 21st, 2007 for $980,430 over 1 year. Status: Declined.

15. (Role: PI) "Low Temperature Magnetometer General User Tool," submitted to the University of Missouri – Research Board, Oct. 8th, 2007 for $80,000 over 1 year. Status: Declined.

16. (Role: PI) "High Efficiency Fast Neutron Detection by a Solid State Direct Conversion Heterostructure," submitted to the Office of Naval Research under the Young Investigator

Program (ONR-YIP) ONR-BAA-08-002, January 11th, 2008 for $313,941 over three years. Status: Declined.

17. (Role: PI) "Integrated System for High Efficiency Fast and Slow Solid-State Neutron Detection – Topic: NTD-08-DET-02," submitted to the Defense Threat Reduction Agency under HDTRA1-08-NTD-BAA, "Advanced Detector Development" as a white paper, February 6th, 2008 for $1.4M over two years. Status: White paper not invited.

18. (Role: PI) "Understanding the Electron and Magnetic Relationship in Honeycomb Based Topological Ferrimagnets," submitted to the National Science Foundation (NSF) under MPS-DMR-CMP during the open submission October window, November 2nd, 2007 for $201,285 over two years. Status: Declined.

19. (Role: PI) "MRI: Acquisition of a High Energy Resolution Angle Resolved Spin Polarized Photoemission and Preparation Instrument," submitted to the National Science Foundation Major Research Instrumentation NSF-MRI-08-503, January 24th, 2008 for $989,950 over two years. Status: Declined .

20. (Role: co-PI) "Transport and Heterojunction Device Properties of M[TCNE] Magnetic Semiconductors," submitted to the National Science Foundation under NSF-ENG-ECCS-EPDT during the open submission Spring window, February 7th, 2008 for $251,683 over two years. Status: Declined

21. (Role: PI) "Low Temperature Magnetometer General User Tool," submitted to the University of Missouri – Research Board, Feb. 18th, 2008 for $80,000 over 1 year. Status: Declined

22. (Role: PI) "Selective Decontamination of Bioagents by Magnetocaloric Heating – Topic: CBT-09-PHM-01," submitted to the Defense Threat Reduction Agency under HDTRA1-08-CBDIF-CBT-BAA, "Chemical and Biological Technologies" as a white paper, February 21st, 2008 for $1.1M over three years. Status: White paper not invited.

23. (Role: PI) "Killing Bacteria and Viruses by Magnetically Heated Nanoparticles," submitted to the Missouri Life Sciences Research Board under LSRB 2008-001 on July 7th, 2008 for $259,026 over two years. Status: White paper not invited.

24. (Role: PI) "The Electronic Structure of Molecular Carbon Solids," submitted to the American Chemical Society – Petroleum Research Fund (ACS-PRF) under the Doctoral New Investigator call, for $100,000 over two years. Status: Declined.

25. (Role: PI) "Integrated System for High Efficiency Fast and Slow Solid-State Neutron Detection," submitted to the National Science Foundation under NSF-08-534, "Joint DNDO/NSF: ARI", April 11th, 2008 for $2M over five years. Status: Recommended for funding by NSF panel, but declined by NSF division head due to funding reduction.

26. (Role: PI) "CAREER: Geometrically Inspired Topological Ferrimagnets," submitted to the National Science Foundation on July 24th, 2008 under NSF-08-557 for $420,405 over 5 years. Status: Declined.

27. (Role: PI) "Primary and Secondary Interactions from Neutrons with Nano-structured a-B5C:Hx" to be considered under Topic I: Sensing Fissile Materials as Long Range," in response to BAA HDTRA1-08-BRCWMD, submitted July 14th, 2008 for $350,000/yr for 3 years. Status: Passed white paper stage, Phase II full proposal declined.

28. (Role: PI) "High Energy and Spatial Resolution Valence and Core Spin Polarized Angle Resolved Photoemission Instrument," submitted to the Office of Naval Research (ONR) under AFOSR-BAA-2008-05 for the Defense University Research Instrumentation Program (DoD-DURIP), August 26th, 2008 for $998,800 over 1 year. Status: Declined.

29. (Role: PI) "High Efficiency Fast Neutron Detection by a Solid State Direct Conversion Heterostructure," submitted to the Office of Naval Research under the Young Investigator Program (ONR-YIP) ONR-BAA-09-005, January 12th, 2009 for $527,380 over three years. Status: Declined.

30. (Role: PI) "Tactical Detection of Neutron Emitting Materials: ROC Ambiguity," submitted to the Leonard Wood Institute under RFP LWI 191.1, April 3rd, 2009 for $811,000 for two years. Status: Not invited to full proposal.

31. (Role: PI) "High Efficiency Solid State Neutron Detector," submitted to DoD DARPA under the Young Faculty Award DARPA-RA-09-14, February 16th, 2009 for $300,000 over two years. Status: Full proposal pending.

32. (Role: Co-PI) "FRG: Bonding and Magnetic Exchange in the metal-[TCNE] Magnet Family," submitted to the National Science Foundation on Nov. 7th, 2008 for $524,193 under NSF-MPS-DMR-CMP. Status: Declined.

33. (Role: PI) "Topic N: High Efficiency Radioluminescent Materials For High Flux Mixed Radiation Fields," submitted to DoD DTRA BRCMWD HDTRA1-08-10-BRCWMD-BAA (period 3), June 1st, 2009 for $500k/yr for three years. Status: White paper declined.

34. (Role: Co-PI) "Topic D: Mitigating Electric Power Blackouts by Synchrophasor Analyses," submitted to DoD DTRA BRCMWD HDTRA1-08-10-BRCWMD-BAA (period 3), June 1st, 2009 for $350k/yr for three years. Status: White paper declined.

35. (Role: Co-PI) "Topic F: Theoretical and experimental investigation of radiation induced defects and their properties, in radiation-resistant insulating and semiconducting AlN-based solids," submitted to DoD DTRA BRCMWD HDTRA1-08-10-BRCWMD-BAA (period 3), June 1st, 2009 for $350k/yr for three years. Status: White paper declined.

36. (Role: Co-PI) "Next Generation On-Road Mass Transit Hybrid Vehicles," submitted to E-ARPA under DE-FOA-0000065, June 2nd, 2009 for $4M over two years. Status: Concept paper declined.

37. (Role: PI) "MRI: Acquisition of a High Energy Resolution Angle Resolved Spin Polarized Photoemission and Preparation Instrument," submitted to the National Science Foundation Major Research Instrumentation NSF-MRI-09-502, January 22nd, 2008 for $998,000 over two years. Status: Recommended by panel; declined by DMR Director.

38. (Role: Co-PI) "Spin Polarized High Resolution Photoemission Near the Fermi Edge From an ArCl Excimer Laser Source," submitted to the DoE EPSCoR program (DE-PS02-09ER09-11), June 6th, 2009 for $598,000 over three years. Status: Preproposal Declined.

39. (Role: PI) "CAREER: Understanding organic-based magnetism from an electronic structure view," submitted to the National Science Foundation on July 23rd, 2009 under NSF-08-557 for $439,161 over 5 years. Status: Rated as "Competitive" by panel, but declined.

40. (Role: PI) "High Efficiency Thermal and Fast Solid State Neutron Detector," submitted to the DoE-NNSA-NA22-proliferation detection program (PDP) on August 25th, 2009 under DE-PS52-09NA29330 for $894,816 over 3 years. Status: Declined.

41. (Role: PI) "High Surface Area Nanostructured Ge/B Heterostructures,"submitted to DoD DTRA BRCMWD HDTRA1-08-10-BRCWMD-BAA (period 4), October 30th, 2009 for $350k/yr for three years. Status: White paper not invited.

42. (Role: Co-PI) "IDR: Hybrid Vehicle Energy Total Efficiency Improvement via an Electromechanical Synergy of Transduction Mechanisms", submitted to the National Science Foundation Interdisciplinary Resesearch Initiative, December 7th, 2009 for $414,933 over three years. Status: Declined.

43. (Role: PI) "Killing Pathogens by Magnetic Hyperthermia", submitted to the DoD-DAPRA-Young Faculty Award under RA-10-23 on Feb. 5th, 2010 for $300,000 over two years. Status: Declined.

44. (Role: PI) "CAREER: Determining the Role of 5f Occupation on the Electrical Carrier Transport of Actnoids" submitted to the National Science Foundation on July 17th, 2010 under NSF-08-557 for $432,242 over 5 years. Status: Declined.

45. (Role: Co-PI) "Uranium-based semiconductors as active layers in solid-state direct-conversion neutron-detection homo- and heterostructure devices", submitted as a pre-proposal for a PNNL-LDRD under the Advanced Radiation Detection & Measurement Initiative (ARDMI), July 11th, 2010. Status: Full proposal declined.

46. (Role: team member) "Windowed VUV Spectroscopy Beamline", submitted to the National Synchrotron Light Source II Beamline Development Initiative, June 2010. Status: Declined to second round.

47. (Role: PI) "Uranium-based Solid State Neutron Detectors", submitted to the National Nuclear Security Adminstration NNSA-PDR-FOA-0000400, on Nov. 12th, 2010 for $895,741 over three years. Status: Declined.

48. (Role: PI) "Next-Generation Energy Recovery and Delivery for Hybrid Electric Vehicles", submitted to the Univ. Missouri – Research Board Engineering Directorate in February 2011 for $70,889. Status: Declined.

49. (Role: PI) "PECVD-Fabricated Amorphous Hydrogenated Boron Carbide as a Robust Low-κ Dielectric", White paper submitted to the Semiconductor Research Corporation Call for Research in Interconnect and Packaging Sciences for Back End Processing Needs, subcategories A2 – low-k dielectrics and B2– dielectrics on May 2nd, 2011. Status: full proposal not requested.

50. (Role: PI) "Next-Generation Energy Recovery and Delivery for Hybrid Electric Vehicles", submitted as a pre-proposal to California Energy Commission Energy Innovations Small Grants (11-01T) for $75,000 on May 11th, 2011. Status: Full proposal not encouraged.

51. (Role: Co-PI) "Determining the Feasibility of High Voltage Recharging from Light Rail Power Utilities for Plug-In Hybrid Vehicles", submitted as a pre-proposal to California Energy Commission Energy Innovations Small Grants for $75,000 on May 11th, 2011. Status: Full proposal not encouraged.

52. (Role: Co-PI) "Determining the Feasibility of Single Crystal Actinide Oxide Thin Films for Solid State Fast Neutron Detection", submitted as a white paper to the PNNL Life Cycle Plan on May 19th, 2011. Status: Full proposal not requested.

53. (Role: PI) "Plan for Implementation of High-Voltage Light Rail Electrical Power Infrastructure for Fast-Charging Electric and Hybrid-Electric Buses", submitted to DoE-FOA-0000451 Clean Cities Community Readiness and Planning for $485,603 on June 13th, 2011. Status: declined.

54. (Role: PI) "Improved Measurement Techniques for Transmutation R&D", submitted to the Nuclear Energy University Program, NEUP-001-11, preapplication submitted on Dec. 7th, 2010 for $1.2M over three years. Status: preapplication approved, full proposal declined.

55. (Role: PI) "Advanced Energy Recovery for Next Generation Hybrid Vehicles", submitted as an earmark white paper for $4.8M in FY11/FY12 to the UMKC-CAS. Status: sent to UM system level for consideration in Fall 2010 – no response from UM system.

56. (Role: PI) "^{3}He Neutron Detector Replacement Technology", submitted as an earmark white paper for $4.8M in FY11/FY12 to the UMKC-CAS. Status: sent to UM system level for consideration in Fall 2010 – no response from UM system.

57. (Role: Co-PI) "Investigating the Local Physical Structure of Thin-Film Amorphous Hydrogenated and Fluorinated Boron Carbide by Solid-State NMR: How Does it Correlate

with Material Properties", submitted to the National Science Foundation Interdisciplinary Resesearch Initiative, October 31st, 2011 for $760,652 over four years. Status: declined.

58. (Role: PI) "Next-Generation Energy Recovery and Delivery for Hybrid Electric Vehicles", submitted to the Univ. Missouri – Research Board Sciences Directorate in February 2012 for $65,996. Status: declined.

59. (Role: Co-PI) "Midwest Research Center for Amorphous Materials Under Extreme Conditions", submitted to the DoE NNSA Stockpile Stewardship Academic Alliance under DE-FOA-0000611 for $8,645,155 over 01 OCT 2012 to 30 SEP 2017. Status: declined.

60. (Role: Co-PI) "Focused Research Group: A Combined Theoretical and Experimental Investigation of the Local Physical Structure of PECVD-Grown Amorphous Hydrogenated Boron Carbide," submitted to the NSF-MPS-DMR Ceramics Program for $843,897 from 08/01/2013 to 07/31/16. Status: declined.

61. (Role: Co-PI) "Noninvasive 3D Fission Density Monitoring System for Small Modular Reactors" submitted to the DoE NEUP (DE-FOA-0000799), Topic RC-2.1 for $800,000 over three years plus $200,000 in match. Status: white paper not recommended.

62. (Role: Co-PI) "Determining the Feasibility of Actinide Oxide Materials for Solid State Fast Neutron Detection", submitted by PI Bruce McNamara of PNNL to the DNDO BAA13-101, Topic RTA-01 for $275,000 for Phase I. Status: declined.

63. (Role: PI) "Development of Dataset Fusion Analysis Methods from Photon–Neutron Spectroscopies", submitted to DTRA HDTRA-1-11-16-BRCWMD-BAA (Amendment 3 – DEC 2013), Phase I white paper submitted. Status: not recommended for full proposal.

64. (Role: Co-PI) "A Fresh Look at Silicon for Compact Megavolt Switching", submitted to Navy STTR N14A-T018 on 09 APR 2014 for Phase I, $150,000. RDT is prime, with BAE and UMKC subs. UMKC portion is $45,000. Status: pending.

65. (Role: PI) "Shield Material Detection by Combined Gamma-Ray and Neutron Spectrometry", submitted to HDTRA1-14-NTD-BAA. White paper submitted on 22 MAR 2014. Status: pending.

66. (Role: Co-PI) "Transient Reactor Imaging and Instrumentation Component Kit for TREAT", submitted to DOE-FOA-0000998 Transient Test Instrumentation Program (IRP-NE), 03 APR 2014 for $2,999,998. Texas A&M prime, UMKC portion is $598,018. Status: declined.

67. (Role: PI) "Enhancing Spectroscopic Resolution by Response Function Fusion", submitted to DHS-14-DN-077-ARI-001, for $445,956 over 36 months on 13 JUN 2014. Status: declined.

68. (Role: PI) "Prompt neutron detection with fast pre-amp integration", submitted to the DHS-DNDO Exploratory Research Program BAA14-101 for $640k over 36 months. Submitted white paper on 25 JUL 2014. Status: full proposal discouraged.

69. (Role: Co-PI) "GaN-Based Nonlinear Transmission Line High Power Microwave Source", submitted to ONR BAA14-008 on 15 JUL 2014 for $4.5M over 36 months by Kyma Technologies (UMKC portion $840,000). Status: white paper not recommended.

70. (Role: PI) "Portable Neutron Remmeter for Next Generation Biodosimetry", preproposal submitted to Topic 8 of USAMRMC W81XWH-BAA15-1 on 10 OCT 2014. Status: proposal is responsive to topic but not a priority for the Army at this time.

71. (Role: Co-PI) "Base Metal Electrode Capacitor Testing", submitted to STTR MDA-T003 (Proposal No. B14B-003-0033, by Radiation Detection Technologies with UMKC as sub for $150,000 on 22 OCT 2014. Status: declined.

72. (Role: PI) "Tunable Conductivity Materials for Control of Microwaves", LOI submitted to the NSSEFF Program - ONR-15-FOA-0003 on 24 NOV 2014. White paper and supporting documentation submitted 02 JAN 2015. Status: full proposal not recommended.

73. (Role: PI) "Collaborative Autonomous Decisions of Vehicle Teams for Radiological Search" submitted to HDTRA-1-11-16-BRCWMD-BAA Amendment 4 (December 2014) Topic 1 on 30 JAN 2015 for $1,050,000. Status: white paper selected, full proposal declined.

74. (Role: PI) "Tuning Fundamental Electronic Properties", submitted to DARPA MATRIX BAA-15-19 Topic Area 2b. Status: white paper declined.

75. (Role: PI) "Advanced Multiferroic Materials for Functional Index Control", submitted to N0001415RFO11 for $3M over 60 months. Status: white paper declined.

76. (Role: Co-PI) "Proof of Concept Towards Revolutionary Method for Manufacturing GaN Substrates for Next Generation Naval Platform Power and Energy", submitted to ONR 15-SN-0005 on 21 DEC 2014 for (UMKC portion $60,000) $600,000 (Prime – Kyma Technologies). Status: white paper recommended, full proposal declined.

Awarded Beamtime or Related Proposals

1. (Role: PI) "Schottky Barrier formation with Isomeric Boron Carbide," submitted to the Center for Advanced Microstructure and Devices Synchrotron Radiation Faciltiy, Sept. 28th, 2004 Status: Awarded three week beamtime slot on 3mTGM. No. UNL-AC-1205.

2. (Role: PI) "Determining and understanding spin-polarization and exchange in the room temperature metal-organic ferromagnets V[Cr(CN)$_6$]H$_2$O and V[TCNE]" submitted, January 30th, 2006 to NSLS (National Synchrotron Light Source) for 14 days beamtime on beamline U5UA for spin polarized photoemission. Status: Awarded, No. 3899.
3. (Role: PI) "Electronic and Magnetic Correlation in Organic-Based Solids" submitted to the Center for Advanced Microstructure and Devices Synchrotron Radiation Faciltiy, July.

13th, 2006 Status: Awarded Beamtime on 3mTGM, 3mNIM and PGM. No. NDSU-AC0707.

4. (Role: PI) "Determining the Near Fermi Edge Spin Magnetic Structure of M[TCNE] Organic-based Magnets]," submitted, May 31th, 2008 to NSLS (National Synchrotron Light Source) for 14 days beamtime on beamline U5UA for spin polarized photoemission. Status: Awarded No. 12282 (U5UA) and 12314 (for U4B and U9B).

5. (Role: Co-PI) "Growth and Characterization of Low Temperature Boron-Rich Ultra-Thin Doped Films Deposited with Controlled Oxygen and Hydrogen Concentrations," submitted June 12th, 2009 to the Lawrence Berkely Molecular Foundry. Status: Pending.

6. (Role: PI) "A comparison between the spin polarized unoccupied electronic structure of solid state magnetic systems determined by XMCD vs. UV-Vis MCD", submitted Sept. 30th, 2009 to the National Synchrotron Light Source. Status: Awarded, No. 15738.

7. (Role: PI) "Determining and understanding the induced spin-polarization and exchange in metal-organic paramagnetic iron porphyrin thin films", submitted Sept. 29th, 2010 to the National Synchrotron Light Source. Status: Awarded, No. 17900.

8. (Role: co-PI) "Electron Spectro-microscopy for Fundamental Studies of the Physics and Chemistry of Materials", submitted to the National Synchrotron Light Source II Beamline Development Initiative, June 2010. Status: Advanced to second round; chosen as finalist; awarded January 2011.

9. (Role: PI) – partner user beamtime invoked and ongoing at beamline U5UA of the National Synchrotron Light Source. 20% of available beamtime dedicated to UMKC studies. This agreement expires when NSLS shuts down the VUV ring.

J. Other - Activities/Certifications/Licenses

DoD Security Clearance (active)
Private Pilot (1998), Multi-Engine-Airplane-Land (1999), Instrument-Rating-Airplane (2015)
Crossfit Level I Trainer (2013)
USA Football Coaching Certification (2009 – present)
Missouri Wrestling Coach Certification (2009 – 2010)
Kansas Wrestling Coach Certification (2011 – 2014)
Co-Owner – Radiation Detection Technologies, Inc. (2011 – present) [http://radectech.com/]