

Shenqiang RenGroup URL: <http://sites.temple.edu/rengroup>**Professional Appointment and Education**

2018 – *University at Buffalo*, Professor
 2015 – 2018 *Temple University*, Associate Professor
 2014 – 2015 *University of Kansas*, Associate Professor
 2011 – 2014 *University of Kansas*, Assistant Professor
 2009 – 2011 *Massachusetts Institute of Technology (MIT)*, Postdoc in Materials Science
 2005 – 2009 *University of Maryland, College Park*, Ph.D. in Materials Science
 2000 – 2004 *Nanjing University of Aeronautics and Astronautics*, B.S. in Materials Chemistry

Fellowships, Honors and Awards

2015 Temple University - “Rising Star”
 2015 NSF - CAREER
 2014 Army Research Office - Young Investigator Award
 2013 Air Force Summer Faculty Fellowship
 2013 NSF Kansas-EPSCoR First Award
 2012 New Faculty General Research Fund Award, University of Kansas
 2009 Dean's Doctoral Research Award (First Prize), University of Maryland, College Park
 2009 Distinguished Doctoral Dissertation Award, University of Maryland, College Park
 2009 China's National Award for Outstanding Graduate Students Abroad
 2003 Jiangsu Mechanical Competition Award
 2000–2004 Honor of Student Scholarship, Nanjing Univ. Aero & Astro

Publications

Names of undergraduate coauthors are underlined; corresponding author is denoted as “*”

1. Beibei Xu, Himanshu Chakraborty, Vivek K. Yadav, Zhuolei Zhang, Michael L. Klein and Shenqiang Ren*, Tunable two-dimensional interfacial coupling in molecular heterostructures, *Nature Communications*, 8, 312 (2017); Nanowerk News Spotlight: <http://www.nanowerk.com/spotlight/spotid=47811.php>
2. Zhuolei Zhang, Peng-Fei Li, Yuanyuan Tang, Andrew J. Wilson, Katherine Willets, Manfred Wuttig,* Ren-Gen Xiong,* Shenqiang Ren*, Tunable electroresistance and electro-optic effects of transparent molecular ferroelectrics, *Science Advances* e1701008 (2017). News Spotlight: <http://www.nanowerk.com/spotlight/spotid=47909.php>
3. Wenxiu Gao, Zhuolei Zhang, Peng-Fei Li, Yuan-Yuan Tang, Ren-Gen Xiong, Guoliang Yuan*, and Shenqiang Ren*, Chiral molecular ferroelectrics with polarized optical effect and electroresistive switching, *ACS Nano*, DOI 10.1021/acsnano.7b07090 (2017);
4. Mengmeng Wei, Mengsi Niu, Pengqing Bi, Xiaotao Hao, Shenqiang Ren, Shijie Xie, Wei Qin*, Optically-controlled magnetization and magnetoelectric effect in organic multiferroic heterojunction, *Advanced Optical Materials*, DOI:10.1002/adom.201700644 (2017)
5. Wei Zhang, Ketan Patel, Shenqiang Ren*, Exfoliated BN shell-based high-frequency magnetic core-shell materials, *Nanoscale*, DOI: 10.1039/c7nr03801a (2017)
6. Ying-Shi Guan, Zhuolei Zhang, Jinbo Pan, Qimin Yan, and Shenqiang Ren*, Rational Design of Molecular Crystals for Enhanced Charge Transfer Properties, *J. Mater. Chem. C*, DOI: 10.1039/c7tc04316c (2017);
7. Zhuolei Zhang, Huashan Li, Zhipu Luo, Shuquan Chang, Zheng Li, Mengmeng Guan, Ziyao

- Zhou, Ming Liu, Jeffrey C. Grossman, and Shenqiang Ren*, Molecular assembly induced charge-transfer for programmable functionalities, *Chemistry of Materials*, DOI: 10.1021/acs.chemmater.7b04357 (2017);
8. B. Xu, H. Chakraborty, R. C. Remsing, M. L. Klein and Shenqiang Ren*, A free-standing molecular spin-charge converter for ubiquitous magnetic-energy harvesting, *Advanced Materials*, DOI: 10.1002/adma.201605150 (2016).
 9. Z. Zhang and Shenqiang Ren*, Colloidal excimer superstructures, *Angewandte Chemie International Edition*, 10.1002/anie.201608845R1 (2016).
 10. B. Xu and Shenqiang Ren*, Integrated charge transfer in organic ferroelectrics for flexible multisensing materials, *Small*, 10.1002/sml.201600980(2016), Selected as **Cover Art** for *Small*.
 11. B. Xu, Z. Luo, A. J. Wilson, K. Chen, W. Gao, G. Yuan, H. D. Chopra, X. Chen, K. A. Willets, Z. Dauter, and Shenqiang Ren*, Multifunctional charge-transfer single crystals through supramolecular assembly, *Advanced Materials*, adma201600383 (2016)
 12. B. Xu, H. Li, H. Li, A. J. Wilson, L. Zhang, K. Chen, K. A. Willets, F. Ren, J. C. Grossman*, Shenqiang Ren*, Chemically driven interfacial coupling in charge-transfer mediated functional superstructures, *Nano Letters*, 10.1021/acs.nanolett.6b00712 (2016)
 13. B. Xu, Z. Luo, W. Gao, A. J. Wilson, C. He, X. Chen, G. Yuan, H. Dai, Y. Rao, K. Willets, Z. Dauter, and Shenqiang Ren*, “Solution-processed molecular opto-ferroic crystals”, *Chemistry of Materials*, 10.1021/acs.chemmater.6b00836 (2016)
 14. Q. Dai, K. Patel, G. Donatelli and Shenqiang Ren*, Magnetic nanocrystals towards energy storage concentration cell, *Angewandte Chemie International Edition*, 10.1002/anie.201604790R1 (2016)
 15. Q. Dai, M.A. warsi, J. Q. Xiao and Shenqiang Ren*, Solution processed MnBi-FeCo magnetic nanocomposites, *Nano Research*, 10.1007/s12274-016-1200-0 (2016)
 16. Qilin Dai, Ketan Patel and Shenqiang Ren*, Exchange Coupled Ferrite Nanocomposites through Chemical Synthesis, *Chemical Communications*, 10.1039/C6CC04911G (2016)
 17. Z. Zhang, B. Xu, L. Zhang and Shenqiang Ren*, Hybrid chalcopyrite-polymer magnetoconducting materials, *ACS Applied Materials & Interfaces*, 10.1021/acsami.6b0336 (2016)
 18. J. Shen, J. Li, and Shenqiang Ren*, “Metal-Redox for MnAl-Based Ternary Magnetic Nanocrystals”, *RSC Advances*, 10.1039/C6RA05853A (2016)
 19. J. Shen, Q. Dai, and Shenqiang Ren*, Phase transformation controlled tetragonality of MnNi based nanocrystals, *Nanotechnology*, NANO-108579 (2016)
 20. M. Gong, X. Jin, R. Sakidja and Shenqiang Ren*, Synergistic strain engineering effect of hybrid plasmonic, catalytic and magnetic core-shell nanocrystals, *Nano Letters*, 15, 8347 (2015)
 21. B. Xu, H. Li, A. Hall, W. Gao, M. Gong, G. Yuan, J. Grossman and Shenqiang Ren*, All-polymeric control of nanoferronics, *Science Advances*, 1, e1501264 (2015)
 22. M. Gong and Shenqiang Ren*, Phase Transformation Driven Surface Reconstruction of FeNi Nanostructures, *Chemistry of Materials*, 10.1021/acs.chemmater.5b03736 (2015)
 23. W. Qin, X. Chen, H. Li, M. Gong, G. Yuan, J. Grossman, M. Wuttig and Shenqiang Ren*, Room temperature multiferroicity of charge transfer crystals, *ACS Nano*, 9, 9373 (2015) Feature on Youtube: <https://www.youtube.com/watch?v=ugM9XVIJtT4>, and ACS Nano Podcast.

24. A. Kirkeminde, J. Shen, M. Gong, J. Cui, and Shenqiang Ren*, Metal-Redox Synthesis of MnBi Hard Magnetic Nanoparticles, *Chemistry of Materials*, DOI: 10.1021/acs.chemmater.5b01224 (2015).
25. A. Kirkeminde, S. Spurlin, L. Draxler-Sixta, J. Cooper, Shenqiang Ren*, Metal Redox Processes for the Controlled Synthesis of Metal Alloy Nanoparticles, *Angewandte Chemie International Edition*, 54, 4203 (2015). Selected as **VIP** Articles.
26. Y. Gong, Q. Liu, J. Wilt, M. Gong, Shenqiang Ren & J. Wu, Wrapping cytochrome c around single-wall carbon nanotube: engineered nanohybrid building blocks for infrared detection at high quantum efficiency, *Scientific Report*, 5, 11328 (2015).
27. D. Jasion, J. Barforrough, Q. Qiao, Y. Zhu, Shenqiang Ren* and K. Leonard*, Low-Dimensional Hyperthin FeS₂ Nanostructures for Efficient and Stable Hydrogen Evolution Electrocatalysis, *ACS Catalysis*, 10.1021/acscatal.5b01637 (2015)
28. J. Shen, M. Gong, Q. Dai, and Shenqiang Ren*, Surface Stress Induced Phase Transformation of Ultrathin FeCo Nanowires, *ACS Applied Materials & Interfaces*, 10.1021/acsami.5b10991 (2015)
29. W. Qin, X. Chen, J. Lohrman, M. Gong, G. Yuan, M. Wuttig and Shenqiang Ren*, External Stimuli Controlled Multiferroic Charge Transfer Crystals, *Nano Res*, 10.1007/s12274-015-0975-8 (2015)
30. M. Gong, T. Shastry, Q. Cui, R. Kohlmeyer, K. Luck, A. Rowberg, T. J. Marks, M. F. Durstock, H. Zhao, M. C. Hersam*, and Shenqiang Ren*, Understanding Charge Transfer in Carbon Nanotube–Fullerene Bulk Heterojunctions, *ACS Appl. Mater. Interfaces*, 7, 7428 (2015).
31. W. Qin, B. Xu and Shenqiang Ren*, An Organic Approach for Nanostructured Multiferroics, *Nanoscale*, DOI: 10.1039/C5NR01435B (2015). **Invited Minireview Article**.
32. A. Kirkeminde and Shenqiang Ren*, Expansion of Metal-Redox Nanosynthesis: The Case Study of Iron Gallium, *Chemical Communications*, DOI: 10.1039/c5cc01239a (2015).
33. M. Gong, Q. Dai and Shenqiang Ren*, Magnetic Dipolar Interaction Induced Cobalt Nanowires, *Nanotechnology*, 10.1088/0957-4484/27/7/07LT02 (2015)
34. M. Gong, R. Sakidja and Shenqiang Ren*, Composition and Oxidation Controlled Magnetism in Ternary FeCoNi Nanocrystals, *Nano Res*, 10.1007/s12274-015-0962-0 (2015)
35. Jin, X.; Zhao, M.; Shen, J.; Yan, W.; He, L.; Thapa, P. S.; Ren, S.; Subramaniam, B.; Chaudhari, R. V., Exceptional performance of bimetallic Pt₁Cu₃/TiO₂ nanocatalysts for oxidation of gluconic acid and glucose with O₂ to glucaric acid, *J. Catal.* 330, 323 (2015).
36. M. Gong, T. A. Shastry, Y. Xie, M. Bernardi, D. Jasion, K. A. Luck, T. J. Marks, J. C. Grossman, Shenqiang Ren*, and M. C. Hersam*, Polychiral Semiconducting Carbon Nanotube-Fullerene Solar Cells, *Nano Letters*, 14, 5308 (2014).
37. Kirkeminde, A.; Ren, S. Q.*, Interdiffusion Induced Exchange Coupling of L1₀-FePd/ α -Fe Magnetic Nanocomposites. *Nano Letters*, 14, 4493 (2014).
38. Gong, M.; Kirkeminde, A.; Skomski, R.; Cui, J.; Ren, S. Q.*, Template-Directed FeCo Nanoshells on AuCu, *Small*, 10, 4118 (2014).
39. J. Shen, H. Cui, X. Huang, M. Gong, W. Qin, A. Kirkeminde, J. Cui, and S. Ren*, Synthesis and Characterization of Rare-Earth-Free Magnetic Manganese Bismuth Nanocrystals, *RSC Advances*, DOI: 10.1039/C4RA12440E (2014).

40. W. Qin, M. Gong, T. A. Shastry, M. C. Hersam, and Shenqiang Ren*, Charge-Transfer Induced Magnetic Field Effects of Nano-Carbon Heterojunctions, *Scientific Report*, DOI:10.1038/srep06126 (2014).
41. M. Gong, A. Kirkeminde, M. Wuttig and Shenqiang Ren*, Phase Transformation Induced Tetragonal-FeCo Nanostructures, *Nano Letters*, DOI:10.1021/nl5030485 (2014).
42. Y. Xie, J. Lohrman and Shenqiang Ren*, Phase Aggregation and Morphology Effects on Nanocarbon Optoelectronics, *Nanotechnology*, 25, 485601 (2014)
43. W. Qin, M. Gong, X. Chen, T. A. Shastry, R. Sakidja, G. Yuan, M. C. Hersam, M. Wuttig and Shenqiang Ren*, Multiferroicity of Carbon-Based Charge Transfer Magnets, *Advanced Materials*, DOI:10.1002/adma.201403396 (2014).
44. W. Qin, J. Lohrman, and Shenqiang Ren*, Magnetic and Optoelectronic Properties of Gold Nanocluster-Thiophene Assembly, *Angewandte Chemie International Edition*, DOI: 10.1002/anie.201402685 (2014).
45. W. Qin, D. Jasion, X. Chen, M. Wuttig, and Shenqiang Ren, Charge-Transfer Magnetoelctrics of Polymeric Multiferroics, *ACS Nano*, 8, 3671 (2014)
46. C. Hong, X. Jin, J. Totleben, J. Lohrman, E. Harak, B. Subramaniam, RV, Chaudhari, and Shenqiang Ren*, Graphene Oxide Stabilized Cu₂O for Shape Selective Nanocatalysis, *Journal of Materials Chemistry A*, 2, 7147 (2014).
47. A. Kirkeminde, P. Gingrich, M. Gong, H. Cui, and Shenqiang Ren*, Iron Sulfide Ink for Growth of Pyrite Crystals, *Nanotechnology*, 25, 205603 (2014).
48. M. Gong, Z. Yang, D. Jasion, X. Xu, B. Sun, S. Mou, Y. Long and Shenqiang Ren*, Superhydrophobicity of Hierarchical ZnO Nanowire Coatings, *Journal of Materials Chemistry A*, 2, 6180 (2014). Highlighted in the Emerging New Investigator Issue.
49. Wang, Y.; Lai, Q.; Zhang, F.; Shen, S.; Fan, M.; He Y.; and Ren, S., High efficiency photocatalytic conversion of CO₂ with H₂O over Pt/TiO₂ nanoparticles. *RSC Advance*, 8, 3671 (2014).
50. Podaru, G.; Ogden, S.; Baxter, A.; Shrestha, T.; Ren, S.; Thapa, P.; Dani, R.; Wang, H.; Basel, M.; Prakash, P.; Bossmann, S.; Chikan, V.; Pulsed Magnetic Field Induced Fast Drug Release from Magneto Liposomes via Ultrasound Generation. *J. Phys. Chem. B*, 118, 11715 (2014).
51. Y. Xie, M. Gang, T. Shastry, J. Lohrman, M. Hersam, and Shenqiang Ren*, Broad Spectral Response Nano-Carbon Bulk Heterojunction Excitonic Photodetectors, *Advanced Materials*, 25, 3433 (2013). Featured on the cover for Advanced Materials.
52. J. Lohrman, Y. Liu, X. Duan, X. Zhao, M. Wuttig and Shenqiang Ren*, All Conjugated Copolymer Excitonic Multiferroics, *Advanced Materials*, 25, 783 (2013).
53. M. Bernardi, J. Lohrman, P. Kumar, A. Kirkeminde, N. Ferralis, J. Grossman and Shenqiang Ren*, Nanocarbon-Based Photovoltaics, *ACS Nano*, 6, 8896 (2012) One of the Most Read Articles in ACS Nano for 09/2012, 10/2012. Featured on the MIT Technology Review, Solar Novus Today, Nanowerk, Energy Harvesting Journal and Printed Electronics World.
54. H. Cui, C. Hong, A. Ying, X. Yang, Shenqiang Ren*, Ultrathin Gold Nanowire-Functionalized Carbon Nanotubes for Hybrid Molecular Sensing, *ACS Nano*, 7, 7805 (2013). Featured on the Nanowerk.

55. Shenqiang Ren*, and M. Wuttig*, Organic Exciton Multiferroics, *Advanced Materials*, 24, 724 (2012).
56. M. Gong, A. Kirkeminde, N. Kumar, H. Zhao, Shenqiang Ren*, Ionic-Passivated FeS₂ Photocapacitors for Energy Conversion and Storage, *Chemical Communications*, 49, 9260 (2013).
57. F. Gao, Shenqiang Ren*, J. Wang, The renaissance of hybrid solar cells: progresses, challenges, and perspectives, *Energy & Environmental Science*, 6, 2020 (2013).
58. M. Gong, A. Kirkeminde, Y. Xie, R. Lu, J. Liu, J. Wu, Shenqiang Ren*, Iron Pyrite Broad Spectral and Magnetically Responsive Photodetectors, *Advanced Optical Materials*, 1, 78 (2013). Featured on the front cover for *Advanced Optical Materials*.
59. A. Kirkeminde, M. Retsch, Q. Wan, G. Xu, R. Hui, J. Wu and Shenqiang Ren*, Surface-Passivated Plasmonic Nano-Pyramids for Bulk Heterojunction Solar Cell Photocurrent Enhancement, *Nanoscale*, 4, 4421 (2012). Featured on the cover for *Nanoscale*.
60. M. Gong, A. Kirkeminde, Shenqiang Ren*, Symmetry-Defying Iron Pyrite (FeS₂) Nanocrystals through Oriented Attachment, *Nature - Scientific Report*, 3, 2092 (2013).
61. X. Jin, L. Dang, J. Lohrman, B. Subramaniam, Shenqiang Ren* and R.V. Chaudhari*, Lattice-Matched Bimetallic CuPd-Graphene Nanocatalysts for Facile Conversion of Biomass-Derived Polyols to Chemicals, *ACS Nano*, 7, 1309 (2013).
62. R. Lu, C. Christianson, A. Kirkeminde, Shenqiang Ren, J. Wu*, Extraordinary Photocurrent Harvesting at Type-II Heterojunction Interfaces: Towards High Detectivity Carbon Nanotube Infrared Detectors, *Nano Letters*, 12, 6244 (2012).
63. A. Kirkeminde, B. Ruzicka, R. Wang, S. Puna, H. Zhao, Shenqiang Ren*, Synthesis and Optoelectronic Properties of Two-Dimensional FeS₂ Nanoplates, *ACS Appl. Mater. & Inter.* 4, 1174 (2012).
64. A. Kirkeminde and Shenqiang Ren*, Thermodynamic Control of Iron Pyrite Nanocrystal Synthesis with High Photoactivity and Stability, *Journal of Materials Chemistry A*, 1, 49 (2013).
65. J. Lohrman, C. Zhang, W. Zhang and Shenqiang Ren*, Semiconducting Carbon Nanotube and Covalent Organic Polyhedron-C₆₀ Nanohybrids for Light Harvesting, *Chemical Communications*, 48, 8377 (2012).
66. B. Ruzicka, R. Wang, J. Lohrman, Shenqiang Ren*, H. Zhao*, Exciton Diffusion in Semiconducting Single-Wall Carbon Nanotubes Studied by Transient Absorption Microscopy, *Physical Review B*. 86, 201457 (2012).
67. T. Zhang, H. Cui, C. Fang, L. Su, Shenqiang Ren, H. Chang, X. Yang, and M. L. Forrest*, Photoacoustic Contrast Imaging of Biological Tissues with Nanodiamonds Fabricated for High Near-Infrared Absorbance, *Journal of Biomedical Optics*, 18, 2 (2013).
68. S. Duan, S. Cai, Y. Xie, T. Bagby, Shenqiang Ren, M. L. Forrest*, Synthesis and Characterization of A Multiarm Poly(acrylic acid) Star Polymer for Application in Sustained Delivery of Cisplatin and A Nitric Oxide Prodrug, *Journal of Polymer Science Part A: Polymer Chemistry*, 50, 2715 (2012).

69. L. Dang, Q. Sa, Z. Zheng, Y. Wang and Shenqiang Ren*, Nanoporous Carbon Sponge as the Anode Materials for Lithium Ion Batteries, *Journal of New Materials for Electrochemical Systems*, 15, 233 (2012).
70. A. Kirkeminde, R. Scott, Shenqiang Ren*, All inorganic Iron Pyrite Nano-Heterojunction Solar Cells, *Nanoscale*, 4, 7649 (2012).
71. Shenqiang Ren, L. Chang, S. Lim, J. Zhao, N. Zhao, M. Smith, V. Bulovic, M. Bawendi and S. Gradecak, Inorganic-Organic Hybrid Solar Cell: Bridging Quantum Dots to Conjugated Polymer Nanowires, *Nano Letters*, 11, 3998 (2011). One of the Most Read Articles in Nano Letters for 09/2011, 10/2011
72. Shenqiang Ren, M. Bernardi, R. Lunt, V. Bulovic, J. Grossman and S. Gradecak, Towards Efficient Carbon Nanotubes/P3HT Solar Cells: Active Layer Morphology, Electrical, and Optical Properties, *Nano Letters*, 11, 5316 (2011). One of the Most Read Articles in Nano Letters for 11/2011.
73. Shenqiang Ren, N. Zhao, S. Crawford, M. Tambe, V. Bulovic and S. Gradecak, Heterojunction Photovoltaics using GaAs Nanowires and Conjugated Polymers, *Nano Letters*, 11, 408 (2011).
74. Shenqiang Ren, S. Lim, and S. Gradecak, Thermal Responsiveness: Self-Assembled Block Copolymer Au clusters, *Chemical Communications*, 46, 6246 (2010)
75. M. Tambe, Shenqiang Ren and S. Gradecak, Effects of Gold Diffusion on n-type Doping of GaAs Nanowires, *Nano Letters*, 10, 4584 (2010).
76. Shenqiang Ren, R. M. Briber and M. Wuttig, Self-Organized Magnetoelectric 2D Onions, *Applied Physics Letters*, 94, 113507 (2009). Featured in *Virtual Journal of Nanoscale Science & Technology*, 30, 19 (2009).
77. Shenqiang Ren, M. Laver and M. Wuttig, Nanolamellar magnetoelectric BaTiO₃-CoFe₂O₄ bicrystal, *Applied Physics Letters*, 95, 153504 (2009).
78. Shenqiang Ren, R. M. Briber and M. Wuttig, Diblock Copolymer Based Self-Assembled Nanomagnetoelectric, *Applied Physics Letters*, 93, 173507 (2008). Featured in *Virtual Journal of Nanoscale Science & Technology*, 18, 20 (2008).
79. Shenqiang Ren and M. Wuttig, Magnetoelectric nano-Fe₃O₄ CoFe₂O₄/PbZr_{0.53}Ti_{0.47}O₃ Composite, *Applied Physics Letters*, 92, 083502 (2008). Featured in *Virtual Journal of Nanoscale Science & Technology*, 17, 10 (2008).
80. Shenqiang Ren and M. Wuttig, Spinodally Synthesized Magnetoelectrics, *Applied Physics Letters*, 91, 083501 (2007).
81. S. Lim, M. Murakami, W. Sarney, Shenqiang Ren, A. Varatharajan, V. Nagarajan, S. Fujino, M. Wuttig, I. Takeuchi, L.G. Salamanca-Riba, The Effects of Multiphase Formation on Strain Relaxation and Magnetization in Multiferroic BiFeO₃ Thin Films, *Advanced Functional Materials*, 17, 2594 (2007).
82. Shenqiang Ren, F. Li, M. Zeng and L. Weng, BaTiO₃/CoFe₂O₄ particulate composites with large high frequency magnetoelectric response, *Journal of Materials Science*, 40, 16 (2005).

Invited Book Chapters Published

83. Shenqiang Ren* and J. Yang*, *Magnetic nanomaterials: fundamental, synthesis and applications*, Wiley-VCH, 2016, chapter 6 (invited book chapter).

84. A. Kirkemide, M. Gong, Shenqiang Ren*, *The Renaissance of Iron Pyrite Photovoltaics: Progress, Challenges and Perspectives*, Springer's Green Energy and Technology Series, 2012, chapter 4 (invited book chapter).
85. Shenqiang Ren* and Y. Wang, *Energy Conversion and Storage Through Nanoparticles*, Edited by Dr. Rafael Luque, RSC Green Chemistry Book Series, 2012, chapter 4 (invited book chapter).
86. Shenqiang Ren, M. Wuttig and R. M. Briber, *Bottom-Up Multifunctional Nanocomposite*, VDM Verlag, Berlin, 2009.