

MAHMUD KHAN

Department of Physics
Miami University
500 E. Spring St.
217 Kreger Hall
Oxford, OH-45056

Cell: (515)-817-3564
Office: (513)-529-2557
Email: khanm2@miamioh.edu

PUBLICATIONS

1. “Magnetocaloric effects and electrical resistivity of $\text{Ni}_2\text{Mn}_{0.55}\text{Co}_x\text{Cr}_{0.45-x}\text{Ga}$ – A Heusler alloy system exhibiting a partially-decoupled first-order phase transition”, Jeffrey Brock, Mahmud Khan, *AIP Advances* **8**, 056429 (2018).
2. “The effect of TM doping on the superconducting properties of $\text{ZrNi}_{2-x}\text{TM}_x\text{Ga}$ (TM = Cu, Co) Heusler compounds”, Dharma Raj Basaula, Jeffrey Brock, Mahmud Khan, *AIP Advances* **8**, 055704 (2018).
3. “Cooling field dependent exchange bias in $\text{Mn}_2\text{Ni}_{1.4}\text{Ga}_{0.6}$: A reentrant spin glass system with short range ferromagnetic ordering”, Mahmud Khan, Abdullah Albagami, *J. All. Comp.* **727**, 100-106 (2017).
4. “Observation of unusual ferromagnetic cluster glass behavior in CrAlGe ”, **Mahmud Khan**, Jeffrey Brock, A. Provino, C. Belfortini, P. Manfrinetti, *Phys. Rev. Materials* **1**, 034402 (2017).
5. “Enhanced magnetic refrigeration capacities in minutely Co doped $\text{Mn}_{5-x}\text{Co}_x\text{Ge}_3$ compounds,” Patrick Carroll, Amber Williams, Miranda Caudle, Lindsay Darkins, Adam Eaton, Barrett Fitzgerald, Brian Knauf, Matthew Rurka, Eli Shlonsky, Paul Wilson, Jeffrey Brock, **Mahmud Khan**, *Intermetallics* **89**, 10-15 (2017).
6. “The effect of Fe doping on the magnetic and magnetocaloric properties of $\text{Mn}_{5-x}\text{Fe}_x\text{Ge}_3$,” Jeffrey Brock, Nathanael Bell-Pactat, Hong Cai, Timothy Dennison, Tucker Fox, Brandon Free, Rami Mahyub, Austin Nar, Michael Saaranen, Tiago Schaeffer, and **Mahmud Khan**, *Adv. Mater. Sci. Eng.* **2017**, 9854184 (2017).
7. “Superconducting properties of $\text{Zr}_{1+x}\text{Ni}_{2-x}\text{Ga}$ and $\text{Zr}_{1-x}\text{Ni}_{2+x}\text{Ga}$ Heusler compounds,” Saad Alzahrani and Mahmud Khan, *AIP Advances* **7**, 055706 (2017).
8. “Unusual nature of the martensite and ferromagnetic transitions in $\text{Ni}_2\text{Mn}_{0.4-x}\text{Fe}_x\text{Cr}_{0.6}\text{Ga}$ Heusler alloys,” Jeffrey Brock and **Mahmud Khan**, *AIP Advances* **7**, 056432 (2017).
9. “Controlling the microstructure and associated magnetic properties of $\text{Ni}_{0.2}\text{Mn}_{3.2}\text{Ga}_{0.6}$ melt spun ribbons by annealing,” **Mahmud Khan**, Ohud Alshammari, Balamurugan Balasubramanian, Bhaskar Das, David J. Sellmyer, Ahmad Us Saleheen, Shane Stadler, *AIP Advances* **7**, 056230 (2017).
10. “Structural distortion, ferroelectricity and ferromagnetism in $\text{Pb}(\text{Ti}_{1-x}\text{Fe}_x)\text{O}_3$ ” Arun K. Yadav, Parasmani Rajput, Dipankar Das, Ohud Alshammari, **Mahmud Khan**, Gautham Kumar, Parasharam M., Shirage, Somaditya Sen, *J. All. Comp.* **701**, 619-625 (2017).
11. “Anisotropy induced anomalies in $\text{Dy}_{1-x}\text{Tb}_x\text{Al}_2$ ” **M. Khan**, A. K. Pathak, Y. Mudryk, K. A. Gschneidner, Jr., and V. K. Pecharsky, *J. Mater. Chem. C*, **5**, 896-901 (2017).
12. “Large refrigeration capacities near room temperature in $\text{Ni}_2\text{Mn}_{1-x}\text{Cr}_x\text{In}$ ” Jeffrey Brock, **Mahmud Khan**, *J. Magn. Magn. Mater.* **425**, 1-5 (2017).
13. “Anomalous transport properties of $\text{Ni}_2\text{Mn}_{1-x}\text{Cr}_x\text{Ga}$ Heusler alloys at the martensite-austenite phase transition” **Mahmud Khan**, Jeffrey Brock, and Ian Sugerma, *Phys. Rev. B*, **93**, 054419 (2016).

14. "High performance Nd-Fe-B permanent magnets without critical elements" Arjun K. Pathak, K. A. Gschneidner, Jr., **M. Khan**, R. W. McCallum, and V. K. Pecharsky, *J. All. Comp.*, **668**, 80-86 (2016).
15. "Magnetism and associated exchange bias in $Ni_{2-x}Co_xMn_{1.4}Ga_{0.6}$ " Ramakanta Chapai and **Mahmud Khan**, *J. Magn. Magn. Mater.* **403**, 97-102 (2016).
16. "Magnetic properties of bulk, and rapidly solidified nanostructured $(Nd_{1-x}Ce_x)_2Fe_{14-y}Co_yB$ ribbons" Arjun K. Pathak, **M. Khan**, K. A. Gschneidner, Jr., R. W. McCallum, L. Zhou, K. Sun, M. J. Kramer, and V. K. Pecharsky, *Acta Materialia*, **103**, 211-216 (2016).
17. "Exchange bias phenomena in $Ni_{2-x}Mn_{1.4+x}Ga_{0.6}$ " **Mahmud Khan** and Ramakanta Chapai, *J. All. Comp.*, **647**, 935 (2015).
18. "Cerium: An Unlikely Replacement of Dysprosium in High Performance Nd-Fe-B Permanent Magnets" Arjun K. Pathak, **Mahmud Khan**, Karl A. Gschneidner Jr., Ralph W. McCallum, Lin Zhou, Kewei Sun, Kevin W. Dennis, Chen Zhou, Frederick E. Pinkerton, Matthew J. Kramer and Vitalij K. Pecharsky, *Adv. Mater.*, **27**, 2663 (2015).
19. "Asymmetric switching like behavior in the magnetoresistance at low fields in bulk metamagnetic Heusler alloys" Tapas Samanta, Ahmad Us Saleheen, Daniel L. Lepkowski, Alok Shankar, Igor Dubenko, Abdiel Quetz, **Mahmud Khan**, Naushad Ali, and Shane Stadler, *Phys. Rev. B*, **90**, 064412 (2014).
20. "Competing A-site and B-site doping effects on magneto-transport of $RE_{0.55}Sr_{0.45}Mn_{1-x}Ru_xO_3$ manganites in the vicinity of the SGI and FMM border" H.S. Alagoz, I. Zivkovic, S.T. Mahmud, M.M. Saber, G. Perrin, J. Shandro, **M. Khan**, Y. Zhang, M. Egilmez, J. Jung, and K. H. Chow, *Physica Status Solidi B: Basic Solid State Physics*, **250**, 2158-2162 (2013).
21. "Influence of A-site doping and strain on the relationship between the anisotropic magneto-resistance and charge localization in films of $La_{0.7-x}Pr_xCa_{0.3}MnO_3$ manganites" H. S. Alagoz, **M. Khan**, M. M. Saber, S. T. Mahmud, K. H. Chow, and J. Jung, *Appl. Phys. Lett.* **102**, 242406 (2013).
22. "Enhancement of Ferromagnetism by Cr doping in Ni-Mn-Cr-Sb Heusler alloys" **Mahmud Khan**, Igor Dubenko, Shane Stadler, J. Jung, S. S. Stoyko, Arthur Mar, Abdiel Quetz, Tapas Samanta, Naushad Ali, and K. H. Chow, *Appl. Phys. Lett.* **102**, 112402 (2013).
23. "Magnetic properties of $Ho_{1-x}Er_xAl_2$ alloys" **Mahmud Khan**, Durga Paudyal, K.A. Gschneidner, Jr. and V.K. Pecharsky, *J. Appl. Phys.*, **113**, 17E106 (2013).
24. "Site-preference and valency for rare-earth sites in $(R-Ce)_2Fe_{14}B$ magnets" Aftab Alam, Mahmud Khan, W. A. McCallum, and D. D. Johnson, *Appl. Phys. Lett.*, **102**, 042402 (2013).
25. "Disorder enhanced intrinsic electroresistance in $Sm_{0.60}Sr_{0.40}Mn_{1-x}Fe_xO_3$ " S. T. Mahmud, M. M. Saber, H. S. Alagoz, K. Biggart, R. Bouveyron, Mahmud Khan, J. Jung, and K. H. Chow, *Appl. Phys. Lett.*, **100**, 2320406 (2012).
26. "The role of Ni-Mn hybridization on the martensitic phase transitions in Mn-rich Heusler alloys", Mahmud Khan, J. Jung, S. S. Stoyko, Arthur Mar, Abdiel Quetz, Tapas Samanta, Igor Dubenko, Naushad Ali, Shane Stadler, and K.H. Chow, *Appl. Phys. Lett.* **100**, 172403 (2012).
27. "The effect of Er doping on the spin reorientation transition in $Ho_{1-x}Er_xAl_2$ ", Mahmud Khan, K.A. Gschneidner, Jr., and V. K. Pecharsky, *J. Magn. Magn. Mater.*, **324**, 1381 (2012).

28. "Magnetism of $\text{Ho}_{1-x}\text{Tb}_x\text{Al}_2$ alloys: Critical dependence of a first order transition on Tb", Mahmud Khan, Ya. Mudryk, K.A. Gschneidner, Jr., and V. K. Pecharsky, *Phys. Rev. B.*, **84**, 214437 (2011).
29. "Spin reorientation transitions in $\text{Ho}_{1-x}\text{Dy}_x\text{Al}_2$ alloys", **Mahmud Khan**, K.A. Gschneidner, Jr., and V. K. Pecharsky, *J. Appl. Phys.*, **110**, 103912 (2011).
30. "Magnetic and thermal properties of $\text{Er}_{75}\text{Dy}_{25}$ single crystal", **Mahmud Khan**, D. L. Schlagel, and T. A. Lograsso, K.A. Gschneidner, Jr., and V. K. Pecharsky, *Phys. Rev. B*, **84**, 134424 (2011).
31. "Use of Stevens coefficients for the prediction of magnetic transitions", **Mahmud Khan**, D. Paudyal, Ya. Mudryk, K.A. Gschneidner, Jr., and V. K. Pecharsky, *Phys. Rev. B*, **83**, 134437 (2011).
32. "Experimental and theoretical study of the magnetic and structural properties of $\text{Er}_{0.75}\text{Tb}_{0.25}\text{Al}_2$ ", **Mahmud Khan**, Ya. Mudryk, D. Paudyal, K.A. Gschneidner, Jr., and V. K. Pecharsky, *Phys. Rev. B*, **82**, 064421 (2010).
33. "Magnetocaloric Effects in $\text{Er}_{1-x}\text{Tb}_x\text{Al}_2$ Alloys", **Mahmud Khan**, K.A. Gschneidner, Jr., and V. K. Pecharsky, *J. Appl. Phys.* **107**, 09A904 (2010).
34. "Multiple Magnetic Ordering Phenomena Evaluated by Heat Capacity Measurements in $\text{Er}_{1-x}\text{Tb}_x\text{Al}_2$ Laves-phase Alloys", **Mahmud Khan**, K.A. Gschneidner, Jr., and V. K. Pecharsky, *Phys. Rev. B*, **80**, 224408 (2009).
35. "Delocalization and hybridization enhance the magnetocaloric effect in Cu-doped Ni_2MnGa ," S. Roy, E. Blackburn, S. M. Valvidares, M. R. Fitzsimmons, S. C. Vogel, **M. Khan**, I. Dubenko, S. Stadler, N. Ali, S. K. Sinha, and J. B. Kortright, *Phys. Rev. B*, **79**, 235127 (2009).
36. "Magnetocaloric effects in Ni-Mn-X based Heusler alloys with X = Ga, Sb, In," Igor Dubenko, **Mahmud Khan**, Arjun Kumar, Pathak, Bhoj Raj Gautam, Shane Stadler, and Naushad Ali, *J. Magn. Magn. Mater.* **321**, 754-757 (2009).
37. "Exchange bias in bulk Ni-Mn-In based Heusler alloys," Arjun K. Pathak, **Mahmud Khan**, Bhoj R. Gautam, Igor Dubenko, Shane Stadler, and Naushad Ali, *J. Magn. Magn. Mater.* **321**, 963-965 (2009).
38. "Intermartensitic transformation in Fe doped Ni-Mn-Cu-Ga Heusler alloys," **Mahmud Khan**, Gautam Bhoj, Arjun Pathak, Igor Doubenko, Shane Stadler and Naushad Ali, *J. Phys.: Condens. Matter* **20**, 505206 (2008).
39. "Magnetosstructural Phase Transitions in $\text{Ni}_{50}\text{Mn}_{25+x}\text{Sb}_{25-x}$ Heusler alloys," **Mahmud Khan**, Igor Dubenko, Shane Stadler and Naushad Ali, *J. Phys.: Condens. Matter*, **20**, 235204 (2008).
40. "Phase transitions and magnetoresistance in $\text{Ni}_{50}\text{Mn}_{50-x}\text{In}_x$ Heusler alloys," Arjun Kumar Pathak, Gautam Bhoj **Mahmud Khan**, Igor Dubenko, Shane Stadler, and Naushad Ali, *J. Appl. Phys.* **103**, 07F315 (2008).
41. "Magnetoresistance and field-induced structural transitions in $\text{Ni}_{50}\text{Mn}_{50-x}\text{Sn}_x$ Heusler alloys," **Mahmud Khan**, Arjun K. Pathak, Moti R. Paudel, Igor Dubenko, Shane Stadler, and Naushad Ali, *J. Magn. Magn. Mater.* **320**, L21-L25 (2008).
42. "Exchange Bias Behavior in Mn rich Ni-Mn-Sn Heusler alloys," **Mahmud Khan**, Igor Dubenko, Shane Stadler and Naushad Ali, *J. Appl. Phys.* **102**, 113914 (2007).

43. “Exchange Bias Behavior in Ni-Mn-Sb Heusler Alloys,” **Mahmud Khan**, Igor Dubenko, Shane Stadler and Naushad Ali, *Appl. Phys. Lett.* **91**, 072510 (2007).
44. “Large magnetic entropy change in Ni₅₀Mn_{50-x}In_x Heusler alloys,” Arjun Kumar Pathak, **Mahmud Khan**, Igor Dubenko, Shane Stadler, and Naushad Ali, *Appl. Phys. Lett.* **90**, 262504 (2007).
45. “Phase Transitions and Corresponding Magnetic Entropy Changes in Ni₂Mn_{0.75}Cu_{0.25-x}Co_xGa Heusler Alloys,” **Mahmud Khan**, Igor Dubenko, Shane Stadler and Naushad Ali, *J. Appl. Phys.* **102**, 023901 (2007)
46. “Magnetic behavior of manganese -doped ZnSe quantum dots,” Shailaja Mahamuni, Amit Lad , Cherukupalli Rajesh , **Mahmud Khan** , Naushad Ali , I. Gopalakrishnan and S. Kulshreshtha, *J. Appl. Phys.* **101**, 103906 (2007).
47. “Magnetocaloric properties of Fe and Ge doped Ni₂Mn_{1-x}Cu_xGa,” **Mahmud Khan**, Shane Stadler, and Naushad Ali, *J. Appl. Phys.* **101**, 09C515 (2007).
48. “Inverse magnetocaloric effect in ferromagnetic Ni₅₀Mn_{37+x}Sb_{13-x} Heusler alloys,” **Mahmud Khan**, Naushad Ali, Shane Stadler, *J. Appl. Phys.* **101**, 053919 (2007).
49. “The overlap of first and second order phase transitions and related magnetic entropy changes in Ni_{2+x}Mn_{1-x}Ga Heusler alloys,” **Mahmud Khan**, Shane Stadler, Jonathan Craig, Joseph Mitchell and Naushad Ali, *IEEE Trans. Mag.* **42**, 3108 (2006).
50. “Exchange Coupled FeNi-X (X= CuO, NiO, and CoO) Nanocomposites Prepared via Ball Milling,” S. R. Mishra, I. Dubenko, **M. Khan**, T. Young, H. Ganegoda, N. Ali, and G. Marasinghe, *IEEE Trans. Mag.* **42**, 2808 (2006).
51. “Magnetocaloric properties of Ni₂Mn_{1-x}Cu_xGa,” Shane Stadler, **Mahmud Khan** , Joseph Mitchell , Angelo Gomes , Igor Dubenko , armando takeuchi , Alberto Guimaraes , and Naushad Ali, *Appl. Phys. Lett.* **88**, 192511 (2006).
52. “Intermartensitic Transformations in Ni₂Mn_{1-x}Co_xGa Heusler Alloys,” **M. Khan**, S. Stadler, and N. Ali, *J. Appl. Phys.* **99**, 08M705 (2006).
53. “Magnetocaloric properties of the Ni₂Mn_{1-x}(Cu,Co)_xGa Heusler alloys” M. Gomes, **M. Khan**, S. Stadler, N. Ali, I. Dubenko, A. Takeuchi, A. P. Guimaraes, Accepted for publication in *J. Appl. Phys.* **99**, 08Q106 (2006).
54. “Anomalous Magnetic Properties of Mechanically Milled Cobalt Oxide Nanoparticles,” S. R. Mishra, I. Dubenko, J. Losby, K. Ghosh, **M. Khan**, and N. Ali, *Journal of Nanoscience and Nanotechnology*, **5**, 2076–2081 (2005).
55. “The structural and magnetic properties of Ni₂Mn_{1-x}M_xGa (M=Co, Cu),” **Mahmud Khan**, Igor Dubenko, Shane Stadler, and Naushad Ali, *J. Appl. Phys.* **97**, 10M304 (2005).
56. “Element-specific magnetic properties of Co₂MnSi thin films,” S. Stadler, D. H. Minott, D. Harley, J. P. Craig, **M. Khan**, I. I. Dubenko, and N. Ali, K. Story, J. Dvorak, Y. U. Idzerda, D. A. Arena and V. G. Harris, *J. Appl. Phys.* **97**, 10C302 (2005).
57. “Magnetic properties of perovskite-derived air-synthesized RBa Co₂ O_{5+delta} (R=La-Ho) compounds,” S. Roy, I. S. Dubenko, **M. Khan**, E. M. Condon, J. Craig, and N. Ali, *Phys. Rev. B*, **71**, 024419 (2005).

58. "Magnetic and structural phase transitions in Heusler type alloys $\text{Ni}_2\text{MnGa}_{1-x}\text{In}_x$," **Mahmud Khan**, Igor Dubenko, Shane Stadler and Naushad Ali, *J. Phys.: Condens. Matter* **16**, 5259-5266 (2004).
59. "Observation of low, intermediate, and high spin states in $\text{GdBaCo}_2\text{O}_{5.45}$," S. Roy, **M. Khan**, Y. Q. Guo, J. Craig, and N. Ali, *Phys. Rev. B*, **65**, 064437 (2002).

