

**Mani R. Pokharel**  
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## EDUCATION

- **Ph.D.**, Condensed Matter Physics, Boston College, MA, USA (2015)
- **M.S.**, Physics, Western Illinois University, IL, USA (2009)
- **M. Sc.**, Physics, Tribhuvan University, Nepal (2003)

## RESEARCH SKILLS

- **Material Synthesis:** Sputtering, mechanical alloying (ball-milling), solid solution, arc-melting, spark plasma sintering (SPS).
- **Material Characterization:** X-ray diffraction (XRD), scanning electron microscopy (SEM), energy dispersive X-Ray spectroscopy (EDXS).
- **Transport Measurement:** Electrical resistivity, thermal conductivity, Seebeck coefficient, Hall coefficient, carrier concentration, mobility and magnetoresistance.
- **Magnetic Properties Measurement:** Both ac and dc measurements of magnetic susceptibility, torque magnetometry.
- **Machine Shop Skill:** Basic operation of band saw, manual lathe and drills.
- **Programming/Computer skills:** LabView, Origin, LaTeX.

## RESEARCH EXPERIENCE

- **Research Assistant, Department of Physics, Boston College (2010–2014)**

Research assistantship funded by Department of Defense as part of the Multi-University Research Initiative (MURI).

**Research focus:** Cryogenic Peltier cooling materials development and characterization.

**Materials of Interest:** Metals, semimetals, semiconductor and insulators predominantly focusing on strongly correlated systems including heavy Fermion compounds.

**Responsibilities:** Synthesize samples and characterize them for physical and thermodynamic properties. Deliver research findings to annual MURI review meetings, American Physical Society (APS) March Meeting and Material Research Society (MRS) Fall/Spring Meetings.

**Collaborations:** Researchers from Boston College, Massachusetts Institute of Technology (MIT), Michigan State University, California Institute of technology (Caltech), Ohio State University, University of Houston, and the Los Alamos National Laboratory.

- **Research Assistant, Department of Physics, Western Illinois University (2008–2009)**

**Experimental:** Raman spectroscopy of the high  $T_c$  superconductor YBCO.

**Theoretical:** Quantum-field theory and color -superconductivity.

## PUBLICATIONS

15. Xiang Chen, Tom Hogan, D. Walkup, Wenwen Zhou, **M. Pokharel**, Mengliang Yao, Wei Tian, Thomas Z. Ward, Y. Zhao, D. Parshall, C. Opeil, J. W. Lynn, Vidya Madhavan, and Stephen D. Wilson; “Influence of electron doping on the ground state of  $(\text{Sr}_{1-x}\text{La}_x)\text{2IrO}_4$ ”, *Physical Review B* 92, 075125 (2015)
14. **Mani Pokharel**, Tulashi Dahal, Zhensong Ren, Peter Czajka, Stephen Wilson, Zhifeng Ren, and Cyril Opeil, “Thermoelectric Properties of  $\text{CeAl}_3$  Prepared by Hot-press Method”. *Energy Conversion and Management*, **87** (2014) 584-588.

13. **Mani Pokharel**, Tulashi Dahal, Zhifeng Ren, and Cyril Opeil, “Thermoelectric Properties of Nanocomposite Heavy Fermion CeCu<sub>6</sub>” *Journal of Alloys and Compounds* **609** (2014) 228–232.
12. **Mani Pokharel**, Huaizhou Zhao, Zhifeng Ren, and Cyril Opeil, “Magnetic Properties of hot-pressed FeSb<sub>2</sub>”. *IEEE Transaction on Magnetism*, **50**, 5 (2014).
11. **Mani Pokharel**, Machhindra Koirala, Huaizhou Zhao, Zhifeng Ren, and Cyril Opeil, “Enhanced Thermoelectric Performance of Te-doped FeSb<sub>2</sub>” *J. Low Temp. Phys.*, **176** (2014) 122–130.
10. **Mani Pokharel**, Huaizhou Zhao, Zhifeng Ren, and Cyril Opeil, “Grain boundary Kapitza resistance analysis of nanostructured FeSb<sub>2</sub>”. *International Journal of Thermal Science*, **71** (2013) 32-35.
9. **Mani Pokharel**, Huaizhou Zhao, Kevin Lukas, Bogdan Mihaila, Zhifeng Ren, and Cyril Opeil, “Phonon Drag Effect in Nanocomposite FeSb<sub>2</sub>” *MRS Communications* **3** (2013) 31-36.
8. **Mani Pokharel\***, Huaizhou Zhao\*, Shuo Chen, Kevin Lukas, Hui Wang, Cyril Opeil, Gang Chen, and Zhifeng Ren, “Figure-of-Merit Enhancement in Nanostructured FeSb<sub>2</sub> by Nano-inclusions Ag<sub>1-x</sub>Sb<sub>x</sub>” *Nanotechnology* **23** (2012) 505402.
7. Machhindra Koirala, Hui Wang, **Mani Pokharel**, Yucheng Lan, Chuanfei Guo, Cyril Opeil, and Zhifeng Ren; "Nanostructured YbAgCu<sub>4</sub> for potentially cryogenic thermoelectric cooling" *Nano Letter*, **14** (9) (2014) 5016 - 5020.
6. Machhindra Koirala, Huaizhou Zhao, **Mani Pokharel**, Shuo Chen, Tulashi Dahal, Cyril Opeil, Gang Chen, and Zhifeng Ren, Thermoelectric property enhancement by Cu nanoparticles in nanostructured FeSb<sub>2</sub>”. *Appl. Phys. Lett.* **102**, 213111 (2013).
5. Chetan Dhital, Tom Hogan, Xiang Chen, Zhensong Ren, **Mani Pokharel**, Wei Tian, Z. Yamani, C. Opeil, J. S. Helton, J. W. Lynn, Ziqiang Wang, and Stephen D. Wilson, “Doping a spin-orbit driven Mott phase in Sr<sub>3</sub>(Ir<sub>1-x</sub>Ru<sub>x</sub>)<sub>2</sub>O<sub>7</sub> – Mott blocking, electronic inhomogeneity, localized and itinerant antiferromagnetism”, *Nature Communications* **5**, 3377 (2014).
4. Huaizhou Zhao, **Mani Pokharel**, Gaohua Zhu, Shuo Chen, Kevin Lukas, Qing Jie, Cyril Opeil, Gang Chen, and Zhifeng Ren, “Dramatic thermal conductivity reduction by nanostructures for large increase in thermoelectric figure-of-merit of FeSb<sub>2</sub>”. *Appl. Phys. Lett.* **99**, 163101 (2011).
3. Chetan Dhital, Sovit Khadka, Z. Yamani, Clarina de la Cruz, T. C. Hogan, S. M. Disseler, **Mani Pokharel**, K. C. Lukas, Wei Tian, C. P. Opeil, Ziqiang Wang, and Stephen D. Wilson, “Spin ordering and electronic texture in the bilayer iridate Sr<sub>3</sub>Ir<sub>2</sub>O<sub>7</sub>.” *Physical Review B* **86**, 100401(R) (2012).
2. **Mani Pokharel**, Machhindra Koirala, Huaizhou Zhao, Kevin Lukas, Zhifeng Ren, and Cyril Opeil, “Thermoelectric properties of Bi-FeSb<sub>2</sub> nanocomposites: Evidence for phonon-drag effect”. *Mater. Res. Soc. Symp. Proc.* Vol. **1490**.
1. **Mani Pokharel**, Huaizhou Zhao, Kevin Lukas, Zhifeng Ren, and Cyril Opeil, “Enhanced Thermoelectric Properties of FeSb<sub>x</sub> Nanocomposites Through Stoichiometric Adjustment”. *Mater. Res. Soc. Symp. Proc.* Vol. **1**.

## PRESENTATIONS

- International Conference on Thermoelectrics (**ICT**), 2014.
- New England Section of American Physical Society (**NES-APS**), Spring Meeting, 2014.
- American Physical Society (**APS**) March Meeting 2014, abstract: Y25.00013.
- American Physical Society (**APS**) March Meeting 2013, abstract: V1.00312.
- Material Research Society (**MRS**) Fall Meeting, 2013, abstract: BB 11.26.
- American Physical Society (**APS**) March Meeting 2012, abstract: A17.002
- Material Research Society (**MRS**) Fall Meeting, 2012, abstract: 1425007.
- Material Research Society (**MRS**) Spring Meeting, 2012, abstract: 1274199.
- International Conference on Thermoelectrics (**ICT**), 2011.

## **AFFILIATIONS**

- *Member*, Nepal Physical Society (**NPS**) (2004–present)
- *Member*, American Physical Society (**APS**) (2010–present)
- *Member*, Materials Research Society (**MRS**) (2010–present)
- *Member*, International Thermoelectric Society (**ITS**) (2010–present)

## **JOURNALS REVIEWED**

- “Chemistry of Materials” by American Chemical Society (ACS).
- “International Journal of Thermal Science” by Elsevier.

## **EMPLOYMENT**

- **Physics Lab Manager, College of Charleston, Charleston, SC** (March 2015-Present)
- **Physics Instructor, Xavier International College, Kathmendu, Nepal** (2004-2007)
- **Physics Instructor, Thames College, Kathmendu, Nepal** (2005-2007)
- **Physics Instructor, Saipal Academy, Kathmendu, Nepal** (2005-2007)

## **AWARDS/SCHOLARSHIPS**

- **2008-2009 Outstanding Graduate Student**, Department of Physics, Western Illinois University, IL.
- **Bessie Meyers Scholarship 2008**, Center for International Studies, Western Illinois University, IL.
- **Physics Graduate Scholarship 2008**, Department of Physics, Western Illinois University, IL.
- **Outstanding Graduate Teaching Assistant 2008**, Department of Physics, Western Illinois University, IL.