

CURRICULUM VITAE

DR. JYOTISH CHANDRA DEBNATH



Personal Details

Dr. Jyotish Chandra Debnath, B.Sc. (Honour's) First Class, M.Sc. (First Class), PhD, University of Wollongong, Australia.

Mobile: +88 01785945529

E-mail: jcd341@uowmail.edu.au; jyotish.debnath@auw.edu.bd

Citation URL: <http://scholar.google.co.za/citations?user=6JQbqKQAAAAJ>

Summary of Achievements

<i>Total publications:</i>	<i>29 (+ 1 under review)</i>
<i>Lead author papers in a top journal:</i>	<i>19</i>
<i>Presentations at international events:</i>	<i>9</i>
<i>Number of journals involved as a reviewer:</i>	<i>11</i>
<i>Reviewer of Research Funding Organization:</i>	<i>ERC Advanced Grant Research Proposal, European Research Council</i>
<i>Supervision/Co-supervision students:</i>	<i>2 (PhD)</i>
<i>Number of projects involved:</i>	<i>6 (since 04/2008)</i>
<i>Research Fund Awarded:</i>	<i>\$462500</i>
<i>Impact point:</i>	<i>75</i>
<i>RG score:</i>	<i>25</i>
<i>Readership:</i>	<i>5658</i>
<i>Citation:</i>	<i>389</i>

Educational background

PhD in Physics (2012), Institute for Superconducting and Electronic Materials (ISEM), University of Wollongong (UOW), NSW 2500, Australia.

Institution: Institute for Superconducting and Electronic Materials (ISEM)
University of Wollongong, Australia.

Supervisor: **Distinguished Professor Shi Xue Dou, ISEM, UOW.**

Dissertation Title: "Novel Magnetocaloric Materials and Room Temperature Magnetic Refrigeration".

M. Sc. in Physics with First Class (By Research)

Institution: University of Dhaka, Bangladesh

Dissertation Title: "Elastic Scattering of Neutrons from ^4He ".

B.Sc. (Honour's) in Physics with First Class

Institution: University of Dhaka, Bangladesh

Career Objectives

Being a Physicist with a passion for teaching and research, I wish to secure a position in a progressive university where I can flourish my teaching and research career by establishing vigorous research programs in Physics/Materials Engineering and associated fields with collaborations in multidisciplinary research initiatives.

Research interests

- Magnetocaloric materials for cancer treatment (hyperthermia)
- Magnetocaloric materials for magnetic refrigeration
- Magnetic and Magnetocaloric properties of Thin film
- Strongly correlated Electron Systems

- Colossal Magnetoresistance
- Thermoelectric effects of Low Cost Earth-abundant materials
- Exchange bias effect.
- Neutron scattering - elastic and inelastic as a probe of magnetic structure and excitations.

Professional Experience

Present Position:

- **Assistant Professor of Physics (2019- till)**, Asian University of Women, Bangladesh.

Previous Position:

- **Scientist/Research Fellow (2017- 2018)**, School of Engineering Science, Lappeenranta University of Technology, Finland.
- **Lecturer /Alfred Deakin Postdoctoral Research Fellow (*Research and Teaching*) (2015-2017)**, Institute for Frontier Materials (IFM) Deakin University, Australia.
- **NRF (National Research Foundation), (Innovation) Postdoctoral Research Fellow (*Research and Teaching*)**, (2012 - 2015), Physics Department, University of Johannesburg, South Africa.
- **Research Associate (2011- 2012)**, Institute for Superconducting and Electronic Materials (ISEM), University of Wollongong, Australia.
- **Research Assistant (PhD candidate), (2008 - 2011)**, Institute for Superconducting and Electronic Materials (ISEM), University of Wollongong, Australia.
- **Assistant Secretary (Administration), (1997-2008)** Bangladesh Parliament Secretariat, Government of the People's Republic of Bangladesh.

Research Projects and Funding Awarded

The following competitive research grants have been achieved to support research activities worth in total of \$462,500 as Chief Investigator (CI).

- **2017-2018: J. C. Debnath** – Multivariable tuning and optimization in magnetostructural systems of magnetocaloric Materials – **Academy of Finland-Research Fellow, Finland, Amount – \$120000.**
- **2015-2017: J. C. Debnath** – New low cost, efficient functional intermetallics free of toxic and rare-earth elements – **Alfred Deakin Postdoctoral Research Fellowship, Australia, Amount – \$175000.**
- **2013-2015: J. C. Debnath** – Novel Magnetocaloric Materials for the application of Large-Scale Magnetic Refrigeration – **NRF (National Research Foundation) Postdoctoral Research Fellowship (Innovation) South Africa, Amount – \$120000.**
- **2012: J. C. Debnath** – Strongly Correlated Electron Systems of Rare earth alloys – **URC and Faculty of Science Postdoctoral Research Fellowship South Africa, Amount – \$30000.**
- **2009: J. C. Debnath** – Neutron diffraction study for the magnetocaloric material $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ – **AINSE (Australian Institute of Nuclear Science and Engineering) research fellowship at ANSTO, Australia, Amount – \$17500.**

Travel Grants

1. **Travel grant to deliver a lecture as an invited speaker** “Future smart materials and their applications” Workshop, January 2018, Finland. (**\$3500**).
2. **SCoRE Cymru Grant** to attend Marie Curie Workshop, UK (May 2017) (**\$3500**).
3. **NRF travel grant to attend and Poster presented** in “The European Conference on Physics of Magnetism 2014 (PM'14)”, 23-27 June 2014, Poland. (**\$3000**).
4. **Award of MMM/Intermag 2010 Conference Student Travel grant 2010** (**\$3500**).

5. **Student Travel grants** for International Conference (2010-2011) (\$750).

Fellowships and Awards

1. **Merit award** (for outstanding PhD contribution), Institute for Superconducting and Electronic Materials (ISEM), University of Wollongong, Australia (2011).
2. **Excellent research Top Up award**, (for outstanding contribution in research) University of Wollongong, Australia (2009-2011).
3. **University Postgraduate Award (UPA)**, University of Wollongong, Australia (2008-2011).
4. **International Postgraduate Tuition Award (IPTA)**, University of Wollongong, (2008-2011).

Referee/Reviewer of the following journals

Regular reviewer of the top class journal including *1) Journal of Applied Physics, 2) Journal of Alloys and Compounds, 3) Dalton Transactions, 4) Journal of Magnetism and Magnetic Materials, 5) Materials Chemistry & Physics, 6) Applied Physics A, 7) EPL, 8) Materials Characterization, 9) RSC Advances, 10) Physica B, 11). Nanomaterials.*

Invited External Reviewer for research funding organizations

- European Research Council (ERC) Advanced Grant Research.
- Australian Nuclear Science and Technology Organization (ANSTO).

Collaboration

Continued joint research work and publications with:

- ✓ Professor S. X. Dou (ISEM, Wollongong University, Australia),
- ✓ Dr. Jinali Wang (ISEM, Wollongong University, ADFA, UNSW, Australia).
- ✓ Professor A. M. Strydom (Johannesburg University, SA),
- ✓ Dr. Precious Shamba (Sheffield University, UK).

Co-supervision of PhD Students

- One PhD student, co-supervised at the University of Wollongong, Australia.
- One PhD student, co-supervised at Deakin University, Australia.

Conference Presentation and Participation

- **Oral presentation as invited Speaker** in “Future smart materials and their applications” Workshop, January 2018 Savonlinna, Finland.
- **Attended** Marie Curie Workshop, Cardiff University, Cardiff, UK, May 2017.
- **Oral presentation as invited Speaker** in “The South African Institute of Physics” (SAIP’14) Conference, July 2014, Johannesburg, South Africa.
- **Attended and Poster presented** in “The European Conference on Physics of Magnetism 2014 (PM’14)”, 23-27 June 2014, Poland.
- **Attended and Poster presented** in “The South African Institute of Physics” (SAIP’14) Conference, July 2014, Johannesburg, South Africa.
- **Attended and Poster presented** in “Southern African Powder Diffraction Conference”, 27-31 January 2014, University of the Witwatersrand, South Africa.
- **Attended and Poster presented** in “2nd International forum on Green energy and Electronic materials, and their applications”, 28-29 March 2011, Innovation Campus, University of Wollongong, Australia.
- **Attended and Poster presented** in “International Conference on Magnetism and Magnetic Materials (ICMM)”, Kolkata, India, 25-29 October 2010.
- **Attended and Poster presented** in “International Symposium on Renewable energy storage and conversion technologies”, 18-20 November 2009, Innovation Campus, University of Wollongong, Australia.

Training

International:

- **Public Administration, November 2005, Royal Institute of Public Administration (RIPA), London, UK.**
- The Safe use of XRD equipment in the laboratory, 3rd September 2008. University of Wollongong, **Australia.**
- Occupational Health and Safety (OH&S) training workshop, 22nd March 2011, University of Wollongong, **Australia.**

Domestic:

- Training on Communication and Negotiation Skills, Economic Relations Division, Ministry of Finance and Training and Technology Transfer, Dhaka, Bangladesh (June 2007).
- Training on Microsoft Project, Academy for Planning and Development, Ministry of Planning, Government of the People's Republic of Bangladesh (September 2007).
- Advanced Legal Training Course, Bangladesh Institute of Parliamentary Studies and UNDP, Dhaka, Bangladesh (August-October 2001).
- Foundation Training Course, Bangladesh Institute of Parliamentary Studies and UNDP, Dhaka, Bangladesh (August-September 2000).
- 22nd Administrative Foundation Training Course, Bangladesh Public Administration Training Centre (BPATC), Savar, Dhaka, Bangladesh (August-December 1998).
- Planning and Project management course, Academy for Planning and Development, Ministry of Planning, Government of the People's Republic of Bangladesh (November-December 1997).

Leadership/Administrative Experience

a. Administrative Leadership:

I have eleven years of administrative experience. I have worked as an Assistant Secretary, Government of the People's Republic of Bangladesh, Bangladesh Parliament Secretariat, Bangladesh (1997-2008). I have developed significant administrative experience in connection to the management of excellent organisational and time management skills along with research projects. I did a diploma course on Public Administration at RIPA (Royal Institute of Public administration) at UK.

b. Research leadership:

After completion of my PhD, I started my postdoctoral carrier at Johannesburg University as an NRF postdoctoral fellow where I was the leader of the magnetocaloric research group which consists of two postdoc and two PhD students. At Johannesburg, I had successfully completed my leadership responsibility which was appreciated by my supervisor and the department.

Following that, I was offered to join Deakin University as a Lecturer/Alfred Deakin Postdoctoral research fellow where I did my research on Magnetocaloric and thermoelectric materials as a leader of this group and completed my tenure successfully.

As a research scientist at the Lappeenranta University of Technology, I also worked as a leader of the Magnetocaloric group. It should be mentioned that all above stated positions have been obtained through the competitive funding process where I was the chief investigator (CI) of these projects.

Teaching Experience

*I have the experiences to teach undergraduate and postgraduate levels to a high standard with good teaching techniques for a couple of years. **Altogether I have nine years of***

Jyotish Chandra Debnath

postdoctoral and teaching experience at the university level. At present as an assistant professor in Physics at Asian University for Women (2019-till), I am conducting various Physics courses of an undergraduate program through lectures, tutorials, demonstrations, and laboratory work. I also have the experience delivering lectures at Deakin University Australia during my appointment as an Alfred Deakin Postdoctoral Research Fellow/Lecturer (both teaching and research) (2015-2017) and Johannesburg University South Africa during my National Research Foundation (NRF) postdoctoral period (both teaching and research) (2012-2015) for the Masters by research and PhD students especially those who are doing research on different branches of physics and materials science. My core lectures were based on general Physics, condensed matter physics, solid state physics and modern physics that takes students on a math-packed journey through the structure-property relations governing magnetism, electricity, thermodynamics and so on. I have experience in the use of different teaching technologies and methods along with adequate Administrative work (Course administration and Examinations processes), leadership experience to conduct research projects and social leadership events.

Current Teaching: Assistant Professor of Physics, Asian University for Women

Provided lectures and prepared exam papers, marked the midterm and final exams, prepared the results and also administered supplementary exams of different physics courses including general physics, electricity and magnetism, mechanics, thermodynamics, Circuits, and electromagnetism etc. I also established the Physics laboratory at AUW.

Present Course (Spring semester):

PHY 1100 - General Physics I (Mechanics, waves and optics, Vector, Heat and thermodynamics etc.).

PHY 1101 - General Physics II (Magnetism, Electricity, Circuits and Electromagnetism etc.).

Math 1002 - Probability and Statistics.

Responsibilities

- Conduct various Physics courses of the undergraduate and postgraduate programs through lectures, tutorials, demonstrations, laboratory works.
- Advised students on the course and academic matters and career decisions.
- Served on faculty committees dealing with such matters as curriculum planning and degree requirements.

Professional Activities:

Coordinator:

Physics course coordinator.

Advisor:

Advisor for UG1 (under graduate year one) students

Curriculum Specialist:

Member of curriculum development committee.

Member of Academic Council, Asian University for Women.

Set up Physics Laboratory:

Established the Physics laboratory at Asian University for Women

Research Experience

I have more than thirteen years of research experience. My research interest focuses on an interdisciplinary direction at the frontier among *Condensed matter Physics*, *Medical Physics* and *Materials Engineering* that includes the preparation and characterization of the energy and functional

Jyotish Chandra Debnath

materials. I am aiming at discovering new materials for multifunctional applications especially for energy and technological and medical (cancer treatment-hyperthermia) applications. My expertise covers both the growth of high-quality bulk, thin film and single crystal materials as well as the physical and chemical characterization of these materials. During my research projects (as postdoctoral fellow) at the University of Wollongong, Australia, University of Johannesburg, South Africa, Deakin University, Australia and Lappeenranta University of Technology, Finland, I have acquired a broad knowledge of the underlying physical mechanisms in addition to my capability in synthesizing new materials of sufficient size and excellent quality.

My current research interest can be characterized as synthesis, characterization and investigation of magnetic, thermodynamic, and charge carrier transport properties, as well as elastic and inelastic neutron scattering measurements of bulks, single crystals and thin films of different Rare earth alloys, intermetallics, and perovskites for the energy-efficient, Medical and technological applications.

Exploring low-cost magnetocaloric materials for magnetic refrigeration, Magnetocaloric (Rare earth) materials for cancer treatment (hyperthermia), Thermoelectric materials, Correlated electron systems, Colossal magnetoresistance, exchange bias, and Magnetism in thin films are the key research topics.

I have the experience to measure the Magnetic, electronic, and thermal properties **over a broad temperature range from above room temperature to below that of liquid helium (345 mK)**. I have the skills to perform research on different types of equipment such as **ARC melting, pulsed laser deposition (PLD), RF-induction melting, solid-state reactions, high speed ball milling, Dilatometer for the analysis of phase transformations (CCT diagram), scanning electron microscopy (SEM), field emission scanning electron microscopy/energy dispersive spectroscopy (FE-SEM/EDX), EBSD, X-ray diffraction (XRD), TEM, and Measurement for Seebeck coefficient and electrical conductivity ZEM-3, Thermal conductivity measurement systems LFA**, Optical microscope, metallography processing (such as Accutom, Rotopol etc.) as well as transport and magnetic measurement facilities such as magnetic and **physical properties measurement systems (MPMS and PPMS)**, etc. I also have operating experience of new research reactor (Neutron diffraction measurement) at ANSTO, Australia and experienced in analysing data by using the Fullprof programme.

Extra Curricular Activities

- **Founding President, Bangladesh Association of Wollongong University, Australia.**

Publications (Published, under review, in progress)

Presently contributed to 29 publications in high impact internationally recognized journals. Most of all published in A+ and A ranking journals. At present, the total citation is 389 h-index is 13 and i10-index is 16.

1. [Debnath, J.C.](#), [Shamba, P.Wang, J.](#), & [Dou, S. X.](#) “High pressure Synchrotron X-ray Diffraction study of the $Mn_{0.94}Ti_{0.06}CoGe$ alloy”. *Physica B*, **554**, 5 (2019).
2. [Debnath, J.C.](#), [J. L. Wang](#) & [Zeng, R.](#) “Charge ordering and exchange bias behaviors in Co_3O_4 porous nanoplatelets and nanorings”. *Journal of Magnetism and Magnetic Materials*, **421**, 422 (2017).
3. [Debnath, J.C.](#), & [J. L. Wang](#), “Magnetic and electrical response of Co-doped $La_{0.7}Ca_{0.3}MnO_3$ manganites/insulator system”. *Physica B*. **504**, 58 (2017).
4. [Debnath, J.C.](#), [S. K. Nair](#), [Strydom, A. M.](#), [Ramesh kumar K.](#), [J. L. Wang](#), “Magnetocaloric properties of metamagnetic $ErRhSi$ compound”. *Journal of Applied Physics*. **120**, 233909 (2016).
5. [Debnath, J.C.](#), [J. L. Wang](#), “Magnetocaloric effect in $HoMn_2Si_2$ compound with multiple magnetic phase transitions”. *Intermetallics*. **78**, 50 (2016).

6. [Debnath, J.C.](#) , [Strydom, A. M.](#), “Large low field magneto-resistance and temperature coefficient of resistance in $\text{La}_{0.8}\text{Ca}_{0.2}\text{MnO}_3$ epitaxial thin film”. *Journal of Alloys and Compounds*, **555**, 33 (2015).
7. [Debnath, J.C.](#) , [Strydom, A. M.](#), [Tappe, F.](#), [Pottgen, R.](#) “Magnetic and thermodynamic properties of Ce_4RuAl ”. *Acta Physica Polonica A*, **127**, 237 (2015).
8. [Debnath, J.C.](#) , [Strydom, A. M.](#), [Tappe, F.](#), [Pottgen, R.](#), (2015). “Magnetic and thermodynamic properties of $\text{Ce}_{23}\text{Ru}_7\text{Mg}_4$ compound”. *SAIP Conference Proceedings*, **978**, 19 (2015).
9. [M. F. Md Din](#), [J. L. Wang](#), [A. J. Studer](#), [R. Zeng](#), [J. C. Debnath](#), [P. Shamba](#), [S. J. Kennedy](#) and [S. X. Dou](#). “Effects of Cr substitution on structural and magnetic properties in $\text{La}_{0.7}\text{Pr}_{0.3}\text{Fe}_{11.4}\text{Si}_{1.6}$ compound” *Journal of Applied Physics*, **115**, 17A942 (2014).
10. [Debnath, J.C.](#) , [Strydom, A. M.](#), “Transport-entropy correlations in $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ manganite”. *Physica B*, **432**, 96 (2014).
11. [Debnath, J.C.](#), [Strydom, A. M.](#), [Wang, J. L.](#), [Shamba, P.](#), & [Dou, S.X.](#). “Critical phenomena and investigation of the spontaneous magnetization by a magnetic entropy analysis in $\text{Mn}_{0.96}\text{Nb}_{0.04}\text{CoGe}$ alloy”. *Journal of Applied Physics*, **113**, 233903 (2013).
12. [Debnath, J.C.](#), [Shamba, P.](#), [Wang, J. L.](#), [Strydom, A. M.](#), & [Dou, S.X.](#). “Investigation of the critical behavior in the $\text{Mn}_{0.94}\text{Nb}_{0.06}\text{CoGe}$ alloys by using the field dependence of magnetic entropy change”. *Journal of Applied Physics*, **113**, 093902 (2013).
13. [Debnath, J.C.](#), [Kim, J. H.](#), [Heo, Y.](#), [Strydom, A. M.](#), & [Dou, S. X.](#). “Correlation between structural parameters and the magnetocaloric effect in epitaxial $\text{La}_{0.8}\text{Ca}_{0.2}\text{MnO}_3/\text{LaAlO}_3$ thin film”. *Journal of Applied Physics*, **113**, 063508 (2013).
14. [Debnath, J.C.](#), [Zeng, R.](#), [Strydom, A. M.](#), [Wang, J.Q.](#), and [Dou, S. X.](#). “Ideal Ericsson cycle Magnetocaloric effect in $(\text{La}_{0.9}\text{Gd}_{0.1})_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ single crystalline nanoparticles. *Journal of Alloys and Compounds*, **555**, 33 (2013).
15. [Shamba, P.](#), [Debnath, J.C.](#), [Wang, J. L.](#), [Zeng, R.](#), [Din, M. F.](#), [Kennedy, S. J.](#) & [Dou, S. X.](#). “Investigation of the magnetocaloric effect and the critical behavior in the $\text{Mn}_{0.94}\text{Ti}_{0.06}\text{CoGe}$ alloys”. *J. Phys.: Condens. Matter*, **25** 056001 (2013).
16. [Md Din, M.F.](#), [Wang, J. L.](#), [Zeng, R.](#), [Shamba, P.](#), [Debnath, J. C.](#) & [Dou, S. X.](#). “Effects of Cu doping on structural and magnetic properties of $\text{La}_{0.7}\text{Pr}_{0.3}\text{Fe}_{11.4}\text{Si}_{1.6}$ compounds”. *Intermetallics*, **36**, 1-7 (2013).
17. [Shamba, P.](#), [Wang, J. L.](#), [Debnath, J. C.](#), [Zeng, R.](#) [Kennedy, S. J.](#) & [Dou, S. X.](#) (2013). “On the crystal structure and magnetic properties of the $\text{Mn}_{0.94}\text{Ti}_{0.06}\text{CoGe}$ alloy”. *Journal of Applied Physics*, **113**, 17A941 (2013).
18. [Wang, J. L.](#), [Shamba, P.](#), [Hutchison, W. D.](#), [Md Din, M. F.](#), [Debnath, J.C.](#), [Avdeev, M.](#), [Zeng, R.](#), [Kennedy, S. J.](#), [Campbell, S. J.](#), & [Dou, S.X.](#). “Ti substitution for Mn in MnCoGe - Effects on structure, magnetism and entropy”. *Journal of Alloys and Compounds*, **577**, 475 (2013).
19. [Zeng, R.](#) , [Zhang, C. F.](#), [Debnath, J.C.](#) ,[Shamba, P.](#), [Wang, J. L.](#), [Dou, S. X.](#) (2012) “Extremely Large Magnetic Entropy Changes, Quantum Phases, Transitions and Diagram in $\text{Gd}(\text{OH})_3$ Single Crystal Nanowires - Quasi-1D Large Spin ($S = -7/2$) Chain Antiferromagnet”. (Journal name: [arXiv:1207.3239](#)). (Bibliographic Code: [2012arXiv1207.3239Z](#)). (Comment: 32 pages, 13 figures).
20. [Debnath, J.C.](#) , [Zeng, R.](#), [Shamba, P.](#), [Kim, J. H.](#) & [Dou, S. X.](#). “Effect of frozen spin on the magnetocaloric property of $\text{La}_{0.7}\text{Ca}_{0.3}\text{CoO}_3$ polycrystalline and single crystal samples”. *Journal of Alloys and Compounds*, **510**, 125-133 (2012).
21. [Debnath, J.C.](#) , [Zeng, R.](#), [Shamba, P.](#), [Kim, J. H.](#) & [Dou, S. X.](#). “Reduction of hysteresis loss in $\text{LaFe}_{11.7}\text{Si}_{1.3}\text{H}_x$ hydrides with significant magnetocaloric effects”. *Applied Physics A*, **106**, 245-250 (2012).

22. [Debnath, J.C.](#) , [Zeng, R.](#), [Kim, J. H.](#) & [Dou, S. X.](#). “Anisotropic and excellent magnetocaloric properties of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ single crystal with anomalous magnetization”. *Materials Science and Engineering B*, **177**, 48-53 (2012).
23. [Zeng, R.](#), [Wang, S. Q.](#), [DU, G. D.](#), [Wang, J. L.](#), [Debnath, J.C.](#) , [Shamba, Z. Y.](#) , [Fang, R.](#) & [Dou, S. X.](#). “Abnormal Magnetic Behaviors and Large Magnetocaloric Effect in MnPS_3 Nanoparticles”. *Journal of Applied Physics*, **111**, 07E144 (2012).
24. [Debnath, J.C.](#) , [Zeng, R.](#), [Kim, J. H.](#) & [Dou, S. X.](#), “Large magnetic entropy change near room temperature in $\text{La}_{0.7}(\text{Ca}_{0.27}\text{Ag}_{0.03})\text{MnO}_3$ perovskite”. *Journal of Alloys and Compounds*, **509**, 3699-3704 (2011).
25. [Debnath, J.C.](#) , [Zeng, R.](#), [Kim, J. H.](#) & [Dou, S. X.](#), “Improvement of refrigerant capacity of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ material with a few percent Co doping”. *Journal of Magnetism and Magnetic Materials*, **323**,139-144 (2011).
26. [Shamba, P.](#) , [Debnath, J.C.](#) , [Zeng, R.](#), [Wang, J.](#), [Kennedy,S.](#), [Campbell, S.](#) & [Dou, S. X.](#). “Reduction of hysteresis losses in the magnetic refrigerant $\text{La}_{0.8}\text{Ce}_{0.2}\text{Fe}_{11.4}\text{Si}_{1.6}$ by the addition of boron”. *Journal of Applied Physics*, **109**, 07A940 (2011).
27. [Zeng, R.](#) , [Debnath, J.C.](#) , [Chen, D.](#), [Wang, J.](#), [Kennedy,S.](#), [Campbell, S.](#) & [Dou, S. X.](#). “Magnetic properties in polycrystalline and single crystal Ca-doped LaCoO_3 ”. *Journal of Applied Physics*, **109**, 07E146 (2011).
28. [Debnath, J.C.](#) , [Zeng, R.](#), [Kim, J. H.](#) & [Dou, S. X.](#). “Multifunctionality from coexistence of large magnetoresistance and magnetocaloric effect in $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ ”. *AIP Conference Proceedings*, **1347** (2011) 278.
29. [Debnath, J.C.](#) , [Zeng, R.](#), [Kim, J. H.](#) & [Dou, S. X.](#), “Giant magnetic entropy change in colossal magnetoresistance in $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ material in low field”. *Journal of Applied Physics*, **107**, 09A916 (2010).

Under Review:

30. [Debnath, J.C.](#) , [Shamba, P.](#), [Wang, J.](#), & [Dou, S. X.](#) (2020). Modification of hydrogenation and magnetocaloric properties of the $\text{La}_{0.8}\text{Ce}_{0.2}\text{FeSi}$ compound induced by interstitial boron. *Journal of Applied Physics*.

References

1. Prof. Shi Xue Dou, PhD, DSc, FTSE

Distinguished Professor

Institute for Superconducting & Electronic Materials (ISEM)

University of Wollongong, Innovation Campus, Australia

Tel: + 61-2-4221 4558, Fax: 61-2-4221 5731

E-mail: shi_dou@uow.edu.au; shi@uow.edu.au

2. Professor Dr. Oscar Cespedes

Associate Professor

Condensed Matter Physics, School of Physics and Astronomy

University of Leeds, LS2 9JT, UK. Tel.: +44-(0)113 343 1885.

E-mail: O.Cespedes@leeds.ac.uk

3. Professor Clemens Ulrich

Associate Professor

School of Physics, The University of New South Wales

Sydney NSW 2052, Australia, Tel: +61(2) 9385 7494

E-mail: ulrich@phys.unsw.edu.au