

CURRICULUM VITAE--- Shi Xue DOU

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Qualification:

1984 Ph.D. High-Temperature Chemistry, Dalhousie University, Halifax, Nova Scotia, Canada

1998 DSc. Published work on High Temp. Supercond., University of New South Wales

Employment History:

2002- ARC Australian Professorial Fellow

1996- Director, of Institute for Superconducting & Electronic Materials

1994- Professor, Director of Centre for Supercond. & Electronic Materials, Uni. of Wollongong

1993-97 ARC Professorial Research Fellow, UNSW and UoW

1989-93 MM Chair of Superconductivity, UNSW

1986-88 Visiting Professor, University of New South Wales

1984-87 Head of Department of Chemistry, Northeastern University, PRC

Visiting Positions:

2004- Honorary Professor, Shanghai University, Shanghai, PRC

2001- Visiting Professor, Technical Institute of Physics and Chemistry, Beijing, PRC

1998- Visiting Professor, Chemistry Promotion Center of National Sci Council, RC, Taiwan

1998- Honorary Professor, Nankai University, PR China

1998- Visiting Professor, Nankai University, PRC

1991 Visiting Professor, Department of Engineering, Exeter University, UK

1989 Visiting Professor, Department of Mater. Sci. & Eng. Lulea University, Sweden

1987-9 Visiting Professor, School of Materials Science & Eng. UNSW, Australia

1981-4 Visiting Scientist, National Research Council of Canada, Halifax, NS

Awards and Honours:

2004 Australian Engineering Excellence Award in highly commended category for enhancement of MgB₂ superconductor's performance through nano-doping

2003 Australian Centenary Medal for contribution in materials science and engineering, awarded by Australian Government

2002-6 Australian Professorial Fellowship awarded by ARC, UoW

1997 International Workshop Award by MRS and ISTEC, Hawaii USA

1993-7 ARC Professorial Research Fellowship, UNSW and UoW

1986 Excellent Teacher Award and Certificate, Chinese Ministry of Metallurgy, PRC

1985 Excellent Teacher Award and Certificate, City of Shenyang, PRC

1982-4 D. Killam Scholarship, Dalhousie University, Canada

Professional Qualifications and Activities:

1994 Fellow of Australian Academy of Technological Science and Engineering

1996 Fellow of International Academy of Electrotechnological Science

Referee for APL, PRB, JPC, JES, JAP, JMR, JMMM, SSC, SuST, Physica C, etc

Reader and Assessor for ARC, Royal Marzden Foundation (NZ), NSF (US), Russian-American Science Council, Science Foundation of HK and Chinese Academic Science.

Member of MRS, IUMRS, TMS, and the Institute of Materials Engineering

Guest editor for two special issues of Supercond. Sci. Technol

Selected Member of Committees and Visiting Appointment:

Member of Advisory Board of Superconductor Science & Technology, UK (1992- 1998)
 Board member of International Cryogenic Materials Conference (ICMC) (2004-2011)
 Member of Advisory Board of Journal of Materials Science and Technology (2002-)
 Member of International Advisory Board for CIMTEC (2006)
 President and Honorary President of Ausasian Sci. and Tech. Soc. (1995-7, 1998-)
 Chair of Topical International Cryogenic Materials Conference (ICMC, 2004)
 Chair of International Symposium in Processing and Critical Current of HTS, Australia (1998)
 Member of Advisory Board for Int. Union of Materials Research Societies-ICA-97
 Member of Advisory Board for 1st, 2nd, 3rd and 5th Int. Conferences on New³ SC (1997-2004)

Research Interests:

- Nano-structured materials and nano-science
- Superconducting and electronic materials,
- Energy storage materials and high energy batteries,
- Fast ionic conductors, oxygen sensors and fuel cells,
- Kinetics and mechanisms of solid-state reaction and diffusion,
- Metal/ceramic composites,
- Analysis of structure and microstructure,
- Chemical properties: stoichiometry, valence states, and chemical bonding,
- Physical properties: thermal, electrical, and magnetic,
- Thermodynamics and phase equilibrium.

ARC Grants as the first Chief Investigator in the last six years

1. Discovery: 2004-6, "Control of nanostructure for enhancing the performance of MgB₂ superconductors by chemical doping", \$305,000
2. Discovery (including APF): 2002-6, "First principle for development of HTS wire", \$1,087,891
3. DEST' SII grant: 2002-4, " Nanofabrication of novel multilayer materials" \$1,477,500
4. Large:1997-9 "Microstructure and J_c in Bi-based HTSs" \$173,789
5. Large: 1999-1 "Investigation of flux pinning in spiral-grown Bi-HTS single crystals" \$184,921
6. Large: 2001-3 "Enhancement of J_c in fields of HTS tapes by fission tracks" \$227,422
7. Linkage Project: 2005-7, Development of MgB₂ coils for MRI application", \$620,304
8. Linkage project: 2002-4, " Fabrication and characterisation of MgB₂ wires", \$310,000
9. Linkage Project: 2002-4, "Developing new cathode materials for Li batteries", \$251,000
10. SPIRT:1999-01, "Effective transverse resistivity of BiHTSC/Ag tapes..." \$262,129
11. SPIRT: 2000-2 "HTS winding for application in fault current limiter" \$294,700
12. SPIRT: 1997-9, "Investigation of HTS high-gradient magnetic separator" \$276,448
13. SPIRT: 1998-2000, "Novel bipolar electrode for electric vehicle batteries", \$213,895
14. Special Grant: 1998, "International Symposium on HTS critical current", \$18,000
15. RIEF: 1997, " Magnetic property measurement system", \$300,000
16. RIEF: 1998, "XRD unit with low and high temperature measurement capability" \$640,000
17. RIEF: 1999, "Multi-layer thin film deposition facility using pulsed laser ablation", \$650,000
18. RIEF: 2001, "High resolution scanning magnetic microscope" \$630,000
19. Int. Fellowship: 1998 "Phase evolution and processing of HTS tapes", \$59,422
20. Int. Fellowship: 1999, "Study of AC losses in HTS tapes with twisted filaments", \$59,192
21. IREX: 2000, "Electro-magnetic behaviour of HTS in various geometries", \$47,649
22. IREX: 2001 "Novel nickel hydride electrode for rechargeable batteries", \$87,178
23. Linkage Int. Fellowship: 2002, "Composite cathode materials for Li-ion battery", \$67,635
24. Linkage International project: 2004-6, "Magneto-optical imaging of current flow in superconducting tapes and wires", \$36,260

Patents and Patent Applications as a Chief Applicant:

"Solid Electrolyte for Oxygen Sensor", U.S. Patent, 4,749,466 (1988)
 "Fabrication of Silver/BiPbSrCaCuO Composites", Australian, PJ 078 (1989)
 "Solid Electrolyte for Oxygen Sensor", Canadian patent, 1,273,603 (1990).
 "Silver-Clad Bi-based Superconducting Tapes", Australian, PL2096 (1992)
 "Sintering Aids for Bi-Based Superconductors", Australian, PK 0616 (1992).

“Improved Grid Alloy for Lead-Acid Battery”, PCT/AU94/00737 (1994)
“Magnesium-Hydrogen Storage Alloy for Rechargeable Batteries”, PM4827, (1994).
“Cryogenic Deformation of Ceramic Superconductors”, Australian 76428/96 (1996)
“Metal-Hydride Storage Rechargeable batteries”, PCT/AU98/01057 (1998)
“Fast Fabrication of Low Loss MgB₂ Wires in Magnetic Shielding”, P42535 (2001)
“Superconducting materials and method of synthesis- “, PCT.AU03/00758

Publications:

450 refereed publications, 100 invited talks and more than 4300 citations by 3/2005.

Career-best publications—Shi Xue DOU

1. ***S.X. Dou**, and H.K. Liu, "Ag-sheathed Bi(Pb)SrCaCuO superconducting tapes", *Supercond. Sci. Technol.* **6**, 297-314 (1993), (Citation = 207).
2. G.J. Bowden, K.T. Wan, **S.X. Dou** et al., "EPR and NMR measurements on high temperature superconductors", *J. Phys. C: Solid State Phys.*, **20**, L545-52 (1987), (Citation = 77).
3. Soltanian, X.L. Wang, I. Kusevic, E. Babic, A.H. Li, M.J. Qin, J. Horvat, H.K. Liu, E.W. Collings, E. Lee, M.D. Sumption and S.X. Dou "High-transport critical current density above 30K in pure Fe-clad MgB₂ tape" *Physica C*, **361**, 84-90 (2001), (Citation = 75)
4. X.L. Wang, ***S.X. Dou**, H.K. Liu, M. Ionescu and B. Zeimetz, "Large low-field magnetoresistance over a wide temperature range induced by weak-link grain boundaries in La_{0.7}Ca_{0.3}MnO₃", *Appl. Phys. Lett.* **73**, 396-398 (1998), (Citation = 74).
5. ***S.X. Dou**, S. Soltanian, J. Horvat, X.L. Wang, S.H. Zhou, M. Ionescu, H.K. Liu, P. Munroe and M. Tomsic, "Enhancement of the critical current density and flux pinning of MgB₂ superconductor by nanoparticle SiC doping", *App. Phys. Lett.* **81**, 3419-3421 (2002), (Citation = 70).
6. Q.Y. Hu, H.K. Liu and **S.X. Dou**, "Formation Mechanism of High T_c Phase and Critical Current in (Bi,Pb)₂Sr₂Ca₂Cu₃O₁₀/Ag Tape", *Physica C*, **250**, 7-14 (1995). (Citation = 67)
7. *K.-H. Müller, C. Andrikidis, H.K. Liu, and **S.X. Dou**, "Intergranular and Intragranular Critical Currents in Silver-Sheathed PBSCCO Tapes", *Phys. Rev. B.* **50**, 10218-24 (1994), (Citation = 62).
8. **S.X. Dou**, Y.C. Guo, and H.K. Liu, "Enhancement of Flux Pinning in Ag-Sheathed (Bi,Pb)₂Sr₂Ca₂Cu₃O_{10-y} Wires through the Use of a Short Period Melt Processing", *Appl. Phys. Lett.* **60**(23), 2929 (1992), (Citation = 57).
9. H.K. Liu, Y.C. Guo and **S.X. Dou**, "Microstructures and Defects in Ag-Clad Bi-Pb-Sr-Ca-Cu-O Wires Prepared through a Phase Formation-Decomposition-Recovery Process", *Supercond. Sci. Technol.*, **5**, 591-98 (1992). (Citation = 56)
10. X.L. Wang, S. Soltanian, J. Horvat, A.H. Li, M.J. Qin, H.K. Liu and **S.X. Dou**, "Very fast formation of superconducting MgB₂/Fe wires with high J_c" *Physica C* **361**, 149-155 (2001). (Citation = 56)
11. **S.X. Dou**, H.K. Liu, K.H. Song, M.H. Apperley, C.C. Sorrell, A.J. Gouch and N. Savvides, "Interaction of Silver Addition with the Bi-Pb-Sr-Ca-Cu-O", *Physica C*, **160**, 533-540 (1989). (Citation = 52).
12. **S.X. Dou**, H.K. Liu, Y.L. Zhang and W.M. Bian, "On the New Phase (Bi,Pb)₃Sr₂Ca₂CuO_y in the Bi-Pb-Sr-Ca-Cu-O System", *Supercond. Sci. & Technol.* **4**, 203-206 (1991). (Citation = 45)
13. **S.X. Dou**, H.K. Liu, M.H. Apperley, K.H. Song and C.C. Sorrell, "Critical Current Density in the Superconducting Bi-Pb-Sr-Ca-Cu-O Wires and Coils", *Supercond. Sci. & Technol.*, **3**, 138-42 (1990). (Citation = 42)
14. **S.X. Dou**, C.R. Masson and P.D. Pacey, "Mechanism of Oxygen Permeation Through Lime-Stabilised Zirconia", *J. Electrochem. Soc.*, **132**, 1843 (1985). (Citation = 41)
15. S.J. Collocott, G.K. White, **S.X. Dou**, and R.K. Williams, "Thermal properties of the high-T_c Superconductors La-Sr-Cu-O and Y-Ba-Cu-O ", *Phys. Rev. B*, **30**, 5684(1987). (Citation = 41)
16. N. Savvides, A. Katsaros and **S.X. Dou**, "Critical Current Density and Flux Pinning in Silver- Superconductor Composites and Tapes", *Physica C* **179**, 361-68 (1991). (Citation = 41)
17. ***S.X. Dou**, K.H. Song, H.K. Liu, C.C. Sorrell, M.H. Apperley and N. Savvides, "Superconductivity in Ag-Doped Bi-Pb-Sr-Ca-Cu-O System", *Appl. Phys. Lett.* **56**, 493-4 (1990), (Citation = 40).

18. *M. Dhallé, M. Cuthbert, M.D. Johnston, J. Everett, R. Flükiger, **S.X. Dou**, W. Goldacker, T. Beales and A.D. Caplin, "Experimental assessment of the current-limiting mechanisms in BSCCO/Ag High-temperature superconducting tapes", *Supercond. Sci. Technol.* **10**, 21-31 (1997). (Citation = 37)
19. H.K. Liu, **S.X. Dou**, N. Savvides, J.P. Zhou, N.X. Tan, A.J. Bourdillon and C.C. Sorrell, "Stabilisation of 110 K Phase in BiSrCaCuO Systems by Pb Substitution", *Physica C*, 157, 93-8 (1989). (Citation = 36)
20. **S.X. Dou**, H.K. Liu, A.J. Bourdillon, M. Kviz, N.X. Tan and C.C. Sorrell, "The Stability of Superconducting Phases in BiSrCaCuO and the Role of Pb Doping", *Phys. Rev. B.*, 40, 5266 (1989) (Citation = 35).
21. J.P. Zhou, C.C. Sorrell, A.J. Bourdillon and **S.X. Dou**, "Liquid Formation at the Peritectic Temperature in Superconducting $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ -Observation of New Phase $\text{YBa}_4\text{CuAlO}_8$ ", *J. Amer. Ceram. Soc.*, 73[7], 2147-50 (1990). (Citation = 34)
22. **S.X. Dou**, H.K. Liu, A.J. Bourdillon, J.P. Zhou, C.C. Sorrell and K.E. Easterling, "Correlation of the Quantity of Labile Ions and Superconducting Transition Temperatures in YBaCuO ", *Solid State Comm.* 68(2) 221-5 (1988). (Citation = 33)
23. **S.X. Dou**, Y.C. Guo and H.K. Liu, "Magnetic Properties and Microstructures in Ag-Clad Bi-Pb-Sr-Ca-Cu-O Wires", *Physica C*, 194, 343-350 (1992). (Citation = 32)
24. Q.Y. Hu, H.W. Weber, F.M. Sauerzopf, G.W. Schulz, R.M. Schalk, H.W. Neumüller and **S.X. Dou**, "Enhancement of Transport Critical Current Densities in $(\text{Bi,Pb})_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_{10}/\text{Ag}$ Tapes at 77 K Following Fast Neutron Irradiation", *Applied Physics Letters*, 29 (24) 3008 (1994). (Citation = 32)
25. H.K. Liu, R.K. Wang and **S.X. Dou**, "TEM Study of Microstructures of Longitudinal Cross section of Ag-clad Bi-Based 2223 tapes", *Physica C* 229 (1&2) 39-46(1994). (Citation = 32)
26. Q.Y. Hu, R.M. Schalk, H.W. Weber, H.K. Liu, R.K. Wang, C.Czurda and **S.X. Dou**, "Anisotropy of The Critical Current in Silver Sheathed $(\text{Bi,Pb})_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_{10}$ Tapes", *J. Appl. Phys.* 78(2), 1123-30 (1995). (Citation = 32)
27. **S.X. Dou**, X.L. Wang, J. Horvat, D. Milliken, A.H. Li, K. Konstantinov, E.W. Collings, M.D. Sumption and H.K. Liu "Flux jumping and a bulk-to-granular transition in the magnetization of a compacted and sintered MgB_2 superconductor" *Physica C* **361**, 79-83 (2001) (Citation = 31)
28. Y. Zhao, H.K. Liu and **S.X. Dou**, "Effect of Co-Doping of Ca and Al on Hole Concentration and Superconductivity in $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ System", *Physica C* 179, 207-213 (1991). (Citation = 31)
29. H.S. Li, D. Courtois, J.M. Cadogan, J.M. Xu and **S.X. Dou**, "Structural and Magnetic Properties of The Novel Ternary Compound $\text{Y}_3(\text{Fe,Ti})_{29}$ ", *J. Phys.: Condens. Matter.*, 6 L771-75 (1994)
30. **S.X. Dou**, H.K. Liu, W.M. Wu, W.X. Wang and C.C. Sorrell, "Melt Processing of Alkali Element Doped $\text{Bi}_2\text{Sr}_2\text{CaC}_2\text{O}_8$ ", *Physica C*, 172(3&4), 295-303 (1990). (Citation = 30)

Refereed Publications in 2000-2004

Book Chapters:

S.X. Dou, "B3.1: High T_c conductor processing techniques", handbook of Superconducting Materials, pp421-448, ed. D Cardwell, University of Cambridge, UK; D. Ginley, NREL, USA, IoP, Bristol and Philadelphia (2003)

P.N. Mikheenko, K.K. Uprety and **S.X. Dou**, "C: High Temperature Superconductors, C2. BSSCO", Handbook of Superconducting Materials, pp947-992, ed. D Cardwell, University of Cambridge, UK; D. Ginley, NREL, USA, IoP, Bristol and Philadelphia (2003)

*T. Silver, A. Pan, M. Ionescu, M. Qin and **S.X. Dou** "Developments in high temperature superconductivity" *Annual Reports on the Progress of Chemistry*, **9, Section C**, 323-373 (2002)

Refereed Journal Papers:

2004

S.L. Bewlay, K. Konstantinov, G.X. Wang, S.X. Dou and H.K. Liu "Conductivity improvements to spray-produced LiFePO_4 by addition of a carbon source" *Materials Letters* **58**, 1788-1791 (2004)

F.S. Cai, G.Y. Zhang, J. Chen, X.L. Gou, H.K. Liu and S.X. Dou " $\text{Ni}(\text{OH})_2$ tubes with mesoscale dimensions as positive-electrode materials of alkaline rechargeable batteries" *Angewandte Chemie International Edition* **43** 4212-4216 (2004)

Z.X. Cheng, X.L. Wang, S. Keshavarzi, M.J. Qin, T.M. Silver, H.K. Liu, H. Kimura and S.X. Dou "The morphology, periodical modulation structure and effects of heat treatment on the superconductivity of $(\text{Ti,Pb})(\text{Sr,Ba})\text{-}1223$ single crystals" *Superconductor Science & Technology* **17** 696-700 (2004)

M. Delfany, X.L. Wang, S. Soltanian, J. Horvat, H.K. Liu and S.X. Dou "Nano-sized Al_2O_3 doping effects on the critical current density of MgB_2 superconductors" *Ceramics International* **30** 1581-1583 (2004)

S. X. Dou, V Braccini, S Soltanian, R Klie , Y Zhu, S Li, X L. Wang, D Larbalestier "Nanoscale-SiC doping for enhancing J_c and H_{c2} in superconducting MgB_2 " *Journal of Applied Physics* **12** vol 96 7549 – 7555 Dec 2004

Yu.V. Fedotov, E.A. Pashitskii, S.M. Ryabchenko, A.V. Semenov, A.V. Pan, S.X. Dou, C.G. Tretiatchenko, V.A. Komashko, Yu.V. Cherpak and V.M. Pan, "Field behavior of the critical current in quasi-single-crystalline YBCO films" *Physica C* **401**, 316-319 (2004)

Z.P. Guo, J.H. Ahn, H.K. Liu and S.X. Dou "Characterization of Nanoparticles of LiMn_2O_4 synthesized by a one-step intermediate-temperature solid-state reaction" *Journal of Nanoscience and Nanotechnology* **4, No 1/2**, 162-166 2004)

J. Horvat, S. Soltanian, X.L. Wang and S.X. Dou "Effect of sample size on magnetic J_c for MgB_2 superconductor" *Applied Physics Letters* **84, 16**, 3109-3111 (2004)

M. Ionescu, B. Winton, T. Silver, S.X. Dou and R. Ramer "Cryogenic magnetic field sensor based on the magnetoresistive effect in bulk $\text{Bi}2212+\text{Usr}_2\text{CaO}_6$ " *Applied Physics Letters* **84, 26**, 5335-5337 (2004)

M. Ionescu, B. Winton, T. Silver, S.X. Dou and R. Ramer "Large magnetoresistive effect in bulk $\text{Bi}2212$ with small additions of UsR_2CaO_6 " *Journal of Physics D: Applied Physics* **37** 1727-1731 (2004)

M. Ionescu, Y. Zhao, M. Roussel, S.X. Dou, R. Ramer and M. Tomsic "Flux pinning in MgB_2 thin films grown by pulsed laser deposition" *Journal of Optoelectronics and Advanced Materials* **6,1**, 169-176 (2004)

Y.M. Kang, K.T. Kim, J.H. Kim, H.S. Kim, P.S. Lee, J.Y. Lee, H.K. Liu and S.X. Dou "Electrochemical properties of Co_3O_4 , $\text{Ni-Co}_3\text{O}_4$ mixture and $\text{Ni-Co}_3\text{O}_4$ composite as anode materials for Li ion secondary batteries" *Journal of Power Sources* **133** 252-259 (2004)

- S. Keshavarzi, M.J. Qin, S. Soltanian, H.K. Liu and S.X. Dou "Vortex dynamics in pure and SiC-doped MgB₂" *Physica C* **408-410**, 601-602 (2004)
- I. Kusevic, E. Babic, D. Marinaro, S.X. Dou and R. Weistein "Critical currents and vortex pinning in U/n treated Bi2223 /Ag tapes" *Physica C* **408-410**, 524-525 (2004)
- K. Konstantinov, S. Bewlay, G. X. Wang, M. Lindsay, J. Z. Wang, H. K. Liu, S.X. Dou and J.-H. Ahn, "New Approach for Synthesis of Carbon-Mixed LiFePO₄ Cathode Materials" *Electrochimica Acta* **50** (2004) 419 - 424.
- R.A. Lewis, Y.J. Wang, F. Gao, X.L. Wang and S.X. Dou "Phonon spectra of cobaltite/manganites in strong magnetic fields" *Journal of Magnetism and Magnetic Materials* **272-276** 616-617 (2004)
- D.A. Luzhbin, A.V. Pan, V.A. Komashko, V.S. Flis, V.M. Pan, S.X. Dou and P. Esquinazi "Origin of paramagnetic magnetization in field-cooled Yba₂Cu₃O_{7-x} films" *Physical Review B* **69** 024506-1 – 024506-7 (2004)
- A.V. Pan, S X Dou "Overcritical state in superconducting round wires sheathed by iron"0021-8979, *Journal of Applied Physics*, vol 96 no. 2, pgs 1146-53, (2004)
- A V Pan, Y Zhao, M Ionescu, S X Dou, V A Komashko, V S Flis, V M Pan "Thermally activated depinning of individual vortices in YBa₂ Cu₃O₇ Superconducting films" 0921-4534, *Physica C*, 407 (2004) 10-16
- A.V. Pan, S. Zhou and S.X. Dou "Iron-sheath influence on the superconductivity of MgB₂ core in wires and tapes" *Superconductor Science and Technology* **17** S410-S414 (2004)
- M.J. Qin, S. Keshavarzi, S. Soltanian, X.L. Wang, H.K. Liu and S.X. Dou "Sample-size dependence of the magnetic critical current density in MgB₂ superconductors" *Physical Review B* **69**, 012501-1 – 012507-4 (2004)
- D. Shi, Y. Xu, H. Yao, Z. Han, J. Lian, L. Wang, A. Li, H.K. Liu and S.X. Dou "The development of Yba₂Cu₃O_x thin films using a fluorine-free sol-gel approach for coated conductors" *Superconductor Science & Technology* **17** 1420-1425 (2004)
- T. Silver, J. Horvat, M. Reinhard, P Yao, S. Keshavarzi, P. Munroe and S.X. Dou "Uranium doping and thermal neutron irradiation flux pinning effects in MgB₂" *IEEE Transactions on Applied Superconductivity* **14**, **1**, 33-39 (2004)
- M.S. Song, S.C. Han, H.S. Kim, J.H. Kim, K.T. Kim, Y.M. Kang, H.J. Ahn, S.X. Dou and J.Y. Lee "Effects of nanosized adsorbing materials on electrochemical properties of sulphur cathodes for Li/S secondary batteries" *Journal of the Electrochemical Society* **16,6**, A791-A795 (2004)
- M.D. Sumption, M. Bhatia, S.X. Dou, M. Rindfliesch, M. Tomsic, L. Arda, M. Ozdemir, Y. Hascicek and E.W Collings "Irreversibility field and flux pinning in MgB₂ with and without SiC additions" *Superconductor Science & Technology* **17**, 1180-1184 (2004)
- G.X. Wang, S. Bewlay, J. Yao, H.K. Liu and S.X. Dou "Tungsten disulfide nanotubes for lithium storage" *Electrochemical and Solid State Letters* **7**, **10**, A321-A323 (2004)
- G.X. Wang, Z.P. Guo, X.Q. Yang, J. McBreen, H.K. Liu and S.X. Dou "Electrochemical and in situ synchrotron x-ray diffraction studies of Li[Li_{0.3}Cr_{0.1}Mn_{0.6}]O₂ cathode materials" *Solid State Ionics* **167** 183-189 (2004)
- G.X. Wang, J. Yao, J.H. Ahn, H.K. Liu and S.X. Dou "Electrochemical properties of nanosize Sn-coated graphite anodes in lithium-ion cells" *Journal of Applied Electrochemistry* **34** 187-190 (2004)
- G X Wang, Steve Bewlay, Jane Yao, J H Ahn, S X Dou and H K Liu "Characterization of LiM_x Fe_{1-x} PO₄ (M=Mg, Zr, Ti) Cathode Materials Prepared by the Sol-Gel Method" *Electrochemical and Solid-State Letters*, **7** (12),A503-A506) 2004
- G.X. Wang, Jane Yao, HK. Liu, SX. Dou and Jung-ho Ahn, "Electrochemical characteristics of tin-coated MCMB as anode in Lithium-ion cells" *Electrochimica Acta* **50** (2004) 515 –520.
- G.X. Wang, S.L. Bewlay, K. Konstantinov, HK Liu, SX Dou and J-H Ahn, "Physical and electrochemical properties of doped lithium iron phosphate electrodes" *Electrochimica Acta* **50** (2004) 441 - 445.

- X.L. Wang, S. Soltanian, M. James, M.J. Qin, J. Horvat, Q.W. Yao, H.K. Liu and S.X. Dou "Significant enhancement of critical current density and flux pinning in MgB₂ with nano-SiC, Si, and C doping" *Physica C* **408-410** 63-67 (2004)
- X.L. Wang, E. Takayama-Muromachi, A.H. Li, Z.X. Cheng, S. Keshavarzi, M.J. Qin and S.X. Dou "Growth, microstructures and superconductivity of Bi_{2-x}Pb_xSr₂Ca_{1-y}Gd_yCu₂O_{8+z} single crystals" *Journal of Applied Physics* **95 No 11**, 6699-6701 (2004)
- X.L. Wang, Q.W. Yao, J. Horvat, M.J. Qin and S.X. Dou "Significant improvement of critical current density in coated MgB₂Cu short tapes through nano-SiC doping and short-time *in situ* reaction" *Superconductor Science & Technology* **17** L21-L24 (2004)
- Q.W. Yao, X.L. Wang, J. Horvat and S.X. Dou "Cu and nano-SiC doped MgB₂ thick films on Ni substrates processed using a very short-time *in situ* reaction" *Physica C* **402** 38-44 (2004)
- Q.W. Yao, X.L. Wang, S. Soltanian, A.H. Li, J. Horvat and S.X. Dou "Fabrication, microstructure and critical current density of pure and Cu doped MgB₂ thick films on Cu, Ni and stainless steel substrates by short-time *in-situ* reaction" *Ceramics International* **30**, 1603-1606 (2004)
- W.K. Yeoh, J. Horvat, S.X. Dou and V. Keast "Strong pinning and high critical current density in carbon nanotube doped MgB₂" *Superconductor Science & Technology* **17**, S572-S577 (2004)
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A Summary of the Most Significant Contributions:

S.X. Dou is an Australian Professorial Fellow at the Faculty of Engineering, UoW. He is also the Director of the Institute for Superconducting and Electronic Materials (ISEM), an interdisciplinary centre with 6 research programs, 50 staff (including 7 ARC fellows) and a large number of postgraduate students. He has built a world-renowned team at UoW, which has made a significant contribution to superconductor technology and applications. He has been pro-active in promoting collaborations uniting industry, national and international institutions and has played a leadership role in the materials science community. He has established a world class laboratory serving more than 13 institutions around Australia. His former PhD graduates, postdoctoral fellows and visiting fellows are widely dispersed in the science and engineering community in north America, Europe, Asia and Australia. His achievements were recognised by the award of the Centenary Medal for service to Australian Society in materials science and engineering by the Australian Government in 2003. He was elected as a Fellow of the Australian Academy of Technological Science and Engineering in 1994. He was awarded a DSc for his published work on high temperature superconductivity by the University of New South Wales in 1998. He was awarded an ARC Australian Professorial Fellowship in 2002. He has won 13 academic awards for excellence in research and teaching. His major contribution to the fields of energy storage and superconductivity is in the area of materials processing and characterisation.