

Institute for Superconducting and Electronic Materials

2004 Refereed Publications

- S.L. Bewlay, K. Konstantinov, G.X. Wang, S.X. Dou and H.K. Liu "Conductivity improvements to spray-produced LiFePO₄ 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 "Ni(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 (Tl,Pb)(Sr,Ba)-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 Al₂O₃ doping effects on the critical current density of MgB₂ superconductors" *Ceramics International* **30** 1581-1583 (2004)
- Yu.V. Fedotov, E.A. Pashitskii, S.M. Ryabchenko, A.V. Semenov, A.V. Pan, S.X. Dou, C.G. Tretiachenko, 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)
- D.J. Goossens, K.F. Wilson, M. James, A.J. Studer and X.L. Wang "Structural and magnetic properties of Y_{0.33}Sr_{0.67}CoO_{2.79}" *Physical Review B* **69**, 134411-1 – 134411-6 (2004)
- Z.P. Guo, J.H. Ahn, H.K. Liu and S.X. Dou "Characterization of Nanoparticles of LiMn₂O₄ synthesized by a one-step intermediate-temperature solid-state reaction" *Journal of Nanoscience and Nanotechnology* **4**, No 1/2, 162-166 (2004)
- J. Horvat "Nanopinning in high-temperature superconductors" *Encyclopedia of Nanoscience and Nanotechnology* **7** Ed: H.S. Nalwa, American Science Publishers, 207-218 (2004)
- J. Horvat "Interaction of superconductor with magnetic sheath as a way for improvement of critical current in MgB₂/Fe superconductor" *Focus on Superconductivity*, Ed: Barry P Martins, Nova Science Publishing, 175-190 (2004)
- J. Horvat, S. Soltanian, A.V. Pan and X.L. Wang "Superconducting screening on different length scales in high-quality bulk MgB₂ superconductor" *Journal of Applied Physics* **96**, **8**, 4342-4351 (2004)
- J. Horvat, S. Soltanian, X.L. Wang and S.X. Dou "Effect of sample size on magnetic J_c for MgB₂ superconductor" *Applied Physics Letters* **84**, **16**, 3109-3111 (2004)
- M. Ionescu, A.H. Li, Y. Zhao, H.K. Liu and A. Crisan "Enhancement of critical current density in Yba₂Cu₃O_{7-δ} thin films grown using PLD on YSZ (001) surface modified with Ag nano-dots" *Journal of Physics D: Applied Physics* **37** 1834-1828 (2004)
- M. Ionescu, B. Winton, T. Silver, S.X. Dou and R. Ramer "Cryogenic magnetic field sensor based on the magnetoresistive effect in bulk Bi2212+Usr₂CaO₆" *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 Bi2212 with small additions of Usr₂CaO₆" *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 MgB₂ thin films grown by pulsed laser deposition" *Journal of Optoelectronics and Advanced Materials* **6**,**1**, 169-176 (2004)
- M. James, D. Cassidy, K.F. Wilson, J. Horvat and R.L. Withers "Oxygen vacancy ordering and magnetism in the rare earth stabilised perovskite form of SrCoO_{3-δ}" *Solid State Sciences* **6** 655-662 (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 Co₃O₄, Ni-Co₃O₄ mixture and Ni-Co₃O₄ 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)
- R.A. Lewis, Y.J. Wang, F. Gao, X.L. Wang and S.X. Dou "Phonon spectra of cabaltite/manganites in strong magnetic fields" *Journal of Magnetism and Magnetic Materials* **272-276** 616-617 (2004)

- R.A. Lewis, Y.J. Wang and M. Henini “Zeeman spectroscopy of Be impurity in GaAs to 30T” *Physica B* **346-347** 483-487 (2004)
- H.K. Liu “Magnesium-nickel nanocrystalline and amorphous alloys for batteries” *Encyclopedia of Nanoscience and Nanotechnology* **4** Ed: H.S. Nalwa, American Science Publishers, 775-789 (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 $\text{Yb}_2\text{Cu}_3\text{O}_{7-\delta}$ films” *Physical Review B* **69** 024506-1 – 024506-7 (2004)
- X.W. Mi, J.C. Cao and C. Zhang “Optical absorption in terahertz-driven quantum wells” *Journal of Applied Physics* **95**, **3** 1191-1195 (2004)
- A.V. Pan, S. Zhou and S.X. Dou “Iron-sheath influence on the superconductivity of MgB_2 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 MgB_2 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 $\text{Yb}_2\text{Cu}_3\text{O}_x$ 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 MgB_2 ” *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 MgB_2 with and without SiC additions” *Superconductor Science & Technology* **17**, 1180-1184 (2004)
- G.X. Wang, J.H. Ahn, J. Yao, S. Bewlay and H.K. Liu “Nanostructured Si-C composite anodes for lithium-ion batteries” *Electrochemistry Communications* **6** 689-692 (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 $\text{Li}[\text{Li}_{0.3}\text{Cr}_{0.1}\text{Mn}_{0.6}]\text{O}_2$ 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, J. Yao and H.K. Liu “Characterization of nanocrystalline Si-MCMB composite anode materials” *Electrochemical and Solid State Letters* **7**, **8**, A250-A253 (2004)
- 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 MgB_2 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 $\text{Bi}_{2-x}\text{Pb}_x\text{Sr}_2\text{Ca}_{1-y}\text{Gd}_y\text{Cu}_2\text{O}_{8+z}$ 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 MgB_2Cu short tapes through nano-SiC doping and short-time *in situ* reaction” *Superconductor Science & Technology* **17** L21-L24 (2004)
- W. Xu, R.A. Lewis, P.M. Koenraad and C.J.G.M. Langerak “High-field magnetotransport in a two-dimensional electron gas in quantizing magnetic fields and intense terahertz laser fields” *Journal of Physics Condensed Matter* **16** 89-101 (2004)
- Q.W. Yao, X.L. Wang, J. Horvat and S.X. Dou “Cu and nano-SiC doped MgB_2 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 MgB_2 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 MgB_2 ” *Superconductor Science & Technology* **17**, S572-S577 (2004)

- Y.H. Yu, S.C. Lee, D.C. Kim, C. Zhang and P. Harrison "Optical losses in dielectric apertured terahertz VCSEL" *Optics & Laser Technology* **36** 575-580 (2004)
- C. Zhang and J.C. Cao "Calculation of the nonlinear free-carrier absorption of terahertz radiation in semiconductor heterostructures" *Physical Review B* **70** 193311-1 – 193311-4, 2004
- C. Zhang, S. Hessami Pilehrood, "Nonlinear free carrier absorption in semiconductor heterostructures in terahertz regime" *Proc of International Society for Optical Engineers* 10-12/12/2003, Perth, Australia, 284-291 (2004)
- Y. Zhao, M. Ionescu, J. Horvat and S.X. Dou "Comparative study of in situ and ex situ MgB₂ films prepared by pulsed laser deposition" *Superconductor Science & Technology* **17**, Ss482-S485 (2004)
- Y. Zhao, M. Ionescu, J. Horvat, A.H. Li and S.X. Dou "Si addition in insitu annealed MgB₂ thin films by pulsed laser deposition" *Superconductor Science & Technology* **17** 1247-1252 (2004)
- S.H. Zhou, A.V. Pan, J. Horvat, M.J. Qin and H.K. Liu "Effects of precursor powders and sintering processes on the superconducting properties of MgB₂" *Superconductor Science & Technology* **17**, S528-S532 (2004)
- S.H. Zhou, A.V. Pan, M.J. Qin, X.L. Wang, H.K. Liu and S.X. Dou "Effects of Si and C doping on the superconducting properties of MgB₂" *Advances in Cryogenic Engineering, International Cryogenic Materials Conference*, Anchorage, Alaska 22-26/9/2003, Ed: U. Balachandran, 554-560 (2004)