

Institute for Superconducting & Electronic Materials

2000 Refereed Publications

HTS Program

M. Apperley, R. Zeng, F. Darmann and G. McCaughey, "Properties of Ag-Mg alloy sheathed Bi-2223 tapes", *Cryogenics* **40** 319-324 (2000)

W.M. Chen, S.S. Jiang, Y.C. Guo, H.K. Liu and S.X. Dou, "Increase in T_c of $YBa_2Cu_3O_y$ by oxygen plasma treatment", *Physica C* **341-348**, 2451-2452 (2000)

W.M. Chen, H.K. Liu, F. Lin, Y.C. Guo, S.S. Jiang and S.X. Dou, "The flux pinning potential of Ag/Bi-2223 tapes for H//c-axis", *Physica C* **341-348**, 1353-1354 (2000)

W.M. Chen, F. Wang, F. Lin, S.S. Jiang, Y.C. Guo, H.K. Liu and S.X. Dou, "Angular distribution of crystal grains in polycrystal Bi-2223/Ag tape", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 519-526 (2000)

W.M. Chen, F. Wang, F. Lin, S.S. Jiang, Y.C. Guo, H.K. Liu and S.X. Dou, "Orientation distribution of grain planes in polycrystal Ag/Bi-2223 tape", *J. Supercond.* **13, 3**, 441-446 (2000)

W.M. Chen, X.X. Yao, Y.C. Guo, H.K. Liu and S.X. Dou, "A Model of Twin Domains in $YBa_2(Cu_{1-x}Co_x)_3O_y$ " *J. Superconductivity* **13, 1**, 129-136 (2000)

S.X. Dou "Connectivity and flux pinning in Ag/Bi-2223 tapes", *Physica C* **341-348**, 2535-2537 (2000)

S.X. Dou, Y.C. Guo, D. Marinaro, J.W. Boldeman, J. Horvat, P. Yao, R. Weinstein, A. Gandni, R. Sawh and Y. Ren, "Effect of U-doping level on flux pinning and radioactivity in silver-clad Bi-2223 tapes using thermal neutron irradiation", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 761-767 (2000)

X.K. Fu, Y.C. Guo, H.K. Liu and S.X. Dou, "Behavior of critical current density and grain misalignment of hot-pressed Bi-2223 bar current leads", *J. Supercond.* **14, 4**, 633-638 (2000)

X.K. Fu, Y.C. Guo, H.K. Liu and S.X. Dou, "Improvement in critical current density of Ag-Mg alloy sheathed Bi-2223 tapes by cryogenic pressing", *Physica C* **341-348**, 2581-2582 (2000)

X.K. Fu, Y.C. Guo, H.K. Liu and S.X. Dou, "The effect of deformation reduction in hot-pressing on critical current density of $(Bi,Pb)_2Sr_2Ca_2Cu_3O_y$ current leads", *Physica C* **341-348**, 2455-2456 (2000)

X.K. Fu, V. Rouessac, Y.C. Guo, P. Yao, H.K. Liu and S.X. Dou, "A new method to fabricate Bi-2223 current leads", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 467-472 (2000).

A. Gandini, R. Weinstein, Y.R. Ren, R.P. Sawh, D. Parks, Y.C. Guo, B. Zeimetz, S.X. Dou, S. Tönies, C. Klein and H.W. Weber, "Critical current enhancement in $(Bi,Pb)_2Sr_2Ca_2Cu_3O_{10}$ tapes via isotropic quasi-columnar defects, induced by uranium fission products", *Physica C* **341-348**, 1453-1454 (2000)

F. Gao, R.A. Lewis, X.L. Wang and S.X. Dou, "Infrared absorption of lanthanum manganites", *Physica C* **341-348**, 2235-2236 (2000).

T.J. Green and W. Xu "Population inversion in an optically pumped single quantum well", *J. Applied Physics*, **88, 6**, 3166-3169.

Y.C. Guo, H.K. Liu and S.X. Dou, "Influence of Ca_2Pb_4 on phase formation and electrical properties of $(Bi,Pb)Sr_2Ca_2Cu_3O_{10}/Ag$ superconducting composites", *J. American Ceramic Socy.* **83, 7**, 1675-1680 (2000).

Y.C. Guo, H.K. Liu, S.X. Dou, Y. Tanaka and T. Kuroda, "High temperature Bi2223/Ag superconducting tapes doped with ultra-fine SiC particles", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 551-558 (2000).

G. Heine, W. Lang, X.L. Wang and S.X. Dou, "Superconducting transition and magnetoresistance in $Bi_2Sr_2CaCu_2O_{8+x}$ single crystals", *Physica* **284-288**, 991-992 (2000)

- T. Hughes, J. Horvat, F. Darmann and S.X. Dou, "Measurement of the a.c. losses in Ag sheathed PbBi2223 tapes with twisted filaments", *Physica C* **341-348**, 2577-2578 (2000)
- M. Ionescu, S. Gong, J. Boldeman and S.X. Dou, "Phase formation in melt-textured Bi-2212 in the presence of uranium oxide", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 481-488 (2000).
- J.X. Jin and S.X. Dou, "A high temperature superconducting winding and its techniques", *Physica C* **341-348**, 2593-2594 (2000)
- J.X. Jin, S.X. Dou, C. Cook, C. Grantham, M. Apperley and T. Beales, "Magnetic saturable reactor type HTS fault current limiter for electrical application", *Physica C* **341-348**, 2629-2630 (2000)
- J.X. Jin, S.X. Dou, F. Darmann, M. Apperley and T. Beales, "Development of an HTS inductor for an electronic high voltage generator", *Physica C* **341-348**, 1601-1602 (2000)
- J.X. Jin, X.K. Fu, H.K. Liu and S.X. Dou, "Performance and applications of bulk Bi-2223 HTS bars produced using a hot-press technique", *Physica C* **341-348**, 2621-2622 (2000)
- J.X. Jin, H.K. Liu, R. Zeng and S.X. Dou, "Developing a HTS magnet for high gradient magnetic separation techniques", *Physica C* **341-348**, 2611-2612 (2000)
- H.K. Liu, W.M. Chen, A. Polyanskii, Y.C. Guo, G. MacCaughey, S.X. Dou, D. Larbalestier and M. Apperley, "The effect of intermediate deformation processing on J_c of Ag/Bi-2223 tapes", *Physica C* **341-348**, 2547-2548 (2000)
- H.K. Liu, A. Polyanskii, R. Zeng, P. Yao, V. Rouessac and S.X. Dou, "Comparison of Ag/Bi-2223 tapes processed with and without hot-pressing and post-annealing", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 801-808 (2000).
- D. Marinaro, S.X. Dou, J. Horvat, Y.C. guo, J. Boldeman, A. Gandini, R. Weinstein, R. Sawh, Y. Ren, "The effects of uranium doping and thermal neutron irradiation on the pinning properties of Ag/Bi-2223 tapes", *Physica C* **341-348**, 1119-1120 (2000)
- D. Milliken and S.X. Dou, "Chemistry of uranium compound doping in $(\text{Bi,Pb})_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_x$ /silver superconducting tapes", *Physica C* **341-348**, 1411-1414 (2000)
- M.D. Sumption, E. Lee, S.X. Dou and E.W. Collings, "Extraction of matrix resistivity from short samples of superconducting and multifilamentary composite tapes: influence of strand twist and internal structure", *Physica C*, **335**, 164-169 (2000).
- S. Tönies, C. Klein, H.W. Weber, B. Zeimet, Y.C. Guo, S.X. Dou, R. Sawh, Y. Ren and R. Weinstein, "Influence of irradiation on the superconducting properties of uranium doped $\text{Bi}_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_x$ tapes", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 755-760 (2000).
- S. Tönies, H.W. Weber, D. Milliken, Y.C. Guo, S.X. Dou, A. Gandini, R. Sawh, Y. Ren and R. Weinstein, "Influence of neutron irradiation on the superconducting properties of BiSCCO-tapes containing different amounts of uranium", *Physica C* **341-348**, 1427-1430 (2000)
- K.K. Uprety, J. Horvat, X.L. Wang, G.D. Gu, H.K. Liu and S.X. Dou, "Field and temperature dependence of critical current density of Fe doped Bi2212 single crystals", *Physica C* **341-348**, 1351-1352 (2000)
- K.K. Uprety, J. Horvat, X.L. Wang, M. Ionescu, H.K. Liu and S.X. Dou, "Flux creep in heavily lead doped Bi2212 single crystal", *Physica C* **341-348**, 1369-1370 (2000)
- X.L. Wang, P. Gehringer, W. Lang, J. Horvat, H.K. Liu and S.X. Dou, "Effect of grain connectivity and density on the magnetoresistance in Ca or Li doped lanthanum manganites", *Solid State Communications*, **117**, 53-56 (2000)
- X.L. Wang, J. Horvat, H.K. Liu, S.X. Dou, G. Heine and W. Lang, "Origin and characterisation of peak effect in pure and Pb doped Bi-2212 single crystals", *Physica C* **341-348**, 651-652 (2000)
- X.L. Wang, J. Horvat, H.K. Liu, L. Sun and S.X. Dou, "Large enhancement of peak effect induced by heavy Pb doping in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ single crystals", *Physica C*, **337**, 225-228 (2000).
- R. Weinstein, Y. Ren, R. Sawh, A. Gandini, W. Hennig, M. Murakami, T. Mochida, N. Chikumoto, N. Sakai, G. Krabbes, W. Bieger, D. Milliken, S.X. Dou, S. Tönies, M. Eisterer and H.W. Weber, "Properties of HTS for successful U/n processing", *Physica C* **341-348**, 1415-1418 (2000)

X.L. Wang, J. Horvat, G.D. Gu, K. Uprety, H.K. Liu and S.X. Dou, "Enhanced flux pinning by Fe point defects in $\text{Bi}_2\text{Sr}_2\text{Ca}(\text{Cu}_{1-x}\text{Fe}_x)_2\text{O}_{8+\delta}$ single crystals", *Physica C*, **337**, 221-224 (2000).

P. Yao, R. Zeng, H.K. Liu and S.X. Dou, "Microstructure of the post hot pressed and room-temperature pressed Ag/Bi(2223) tapes", *Physica C* **377**, 174-179 (2000).

P. Yao, R. Zeng, H.K. Liu and S.X. Dou, "TEM study on the effects of intermediate quenching on some defects in high J_c Bi-2223 tapes", *Physica C* **337**, 169-173 (2000).

B. Zeimetz, B.A. Glowacki, Y.S. Cheng, A. Kursumovic, E. Mendoza, X. Obradors, T. Puig, S.X. Dou and J.E. Evetts, "Transport critical current measurements in a pressurised liquid nitrogen vessel", *Proc. 4th European Conf on Applied Superconductivity*, Sitges, Spain, 14-17/9/99, 1033-1036 (2000)

R. Zeng, P. Yao, J. Horvat, H.K. Liu, T.P. Beales and S.X. Dou, "Controlled intermediate quenching and its effect on microstructure and critical current density", *Adv. in Cryogenic Eng. Mater. Proc. Int. Cryogenic Mat. Conf*, Montreal, Quebec, Canada, 12-16/7/99, 575-581 (2000)

Battery Program

L. Sun, G.X. Wang, H.K. Liu, D.H. Bradhurst and S.X. Dou, "Synthesis of Nonstoichiometric amorphous Mg-based alloy electrodes by mechanical milling", *Electrochem. & Sol. State Lett.* **B, 3**, 121-124 (2000)

G.X. Wang, J. Horvat, D.H. Bradhurst, H.K. Liu and S.X. Dou, "Structural, physical and electrochemical characterisation of $\text{LiNi}_x\text{Co}_{1-x}\text{O}_2$ solid solutions" *J. Power Sources*, **85** 279-283 (2000)

G.X. Wang, L. Sun, D.H. Bradhurst, S.X. Dou and H.K. Liu, "Lithium storage properties of nanocrystalline η - Cu_6Sn_5 alloys prepared by ball-milling" *J. Alloys & Comp.* **299**, L12-L15 (2000)

G.X. Wang, L. Sun, D.H. Bradhurst, S. Zhong, S.X. Dou and H.K. Liu, "Innovative nanosize lithium storage alloys with silica as active centre", *J. Power Sources* **88**, 278-281 (2000)

G.X. Wang, L. Sun, D.H. Bradhurst, S. Zhong, S.X. Dou and H.K. Liu, "Nanocrystalline NiSi alloy as an anode material for lithium-ion batteries", *J. Alloys & Compounds* **306**, 249-252 (2000).

G.X. Wang, P. Yao, D.H. Bradhurst, S.X. Dou and H.K. Liu, "Structure characteristics and lithium ionic conductivity of $\text{La}_{(0.5-2x/3)}\text{Sr}_x\text{Li}_{0.3}\text{TiO}_3$ perovskites" *J. Mat. Science* **35**, 4289-4291 (2000).

S. Zhong, G.X. Wang, J. Wang, D.H. Bradhurst, M. Ionescu, S.X. Dou and H.K. Liu, "An anode material with perovskite structure for rechargeable Li-ion batteries" *J. New. Mat. Electrochem. Syst.* **3**, 9-12 (2000)

Solid State Physics Program

R.J. Heron, R.A. Lewis, R.G. Clark, R.P. Starrett, B.E. Kane, G.R. Facer, N.E. Lumpkin, D.G. Rickel, L.N. Pfeiffer and K.W. West, "Cyclotron resonance in undoped, top-gated heterostructures", *Semicond. Sci. Technol.* **15**, 589-592 (2000)

H.A. Nickel, G. Kioseoglou, T. Yeo, H.D. Cheong, A. Petrou, B.D. McCombe, D. Broido, K.K. Bajaj and R.A. Lewis "Internal transitions of confined neutral magnetoexcitons in $\text{GaAs}/\text{Al}_x\text{Ga}_{1-x}\text{As}$ quantum wells" *Physical Review B* **62**, **4**, 2773-2779 (2000)

G. Piao, P. Fisher and R.A. Lewis, "Piezospectroscopy of the $p_{3/2}$ and Fano series of singly ionized zinc in germanium" *Phys. Rev. B* **61**, **11**, 7466-7478 (2000)

S.T. Yau, C. Zhang and P. Innes, "Asymmetry and rectification in the tunnel current of a nanometer-sized metal-conjugated polymer-metal junction", *J. Chemical Physics* **112**, **15**, 6774-6778 (2000)

C. Zhang, "Effect of elastic scattering of hot electrons on thermionic cooling in a single barrier structure", *Int. J. Mod. Physics B* **14**, **14**, 1451-1457 (2000)

C. Zhang, "Electromagnetic absorption in two dimensional systems under a magnetic field and a unidirectional periodic potential", *Aus. J. Physics* **53**, 65-76 (2000)

C. Zhang, "Energy loss rate of a heavy particle in a magnetically quantized two-dimensional electron gas under intense laser radiation" *Solid State Commun.* **116**, 241-246 (2000)

C. Zhang, "The magnetoconductivity of a square lattice in a periodically modulated magnetic field" *Solid State Commun.* **115**, 163-166 (2000)