

NOTA BENE: We have received our first Web sponsorship of \$1000 from Superconductive Components, Inc. Thank you SCI! If you would like to sponsor *High- T_c Update*, please see the information available online through our Web site (<http://www.iitap.iastate.edu/htcu/htcu.html>). Contact the editor if you have any questions.

The following Nota Bene is contributed by Sreeparna Mitra, Project Director and Editor of *High- T_c Update*. Our Science Editor, John R. Clem, is currently on travel.

Vortices

Muon-spin-rotation (μ SR) spectroscopy has been used by J. E. Sonier (TRIUMF) et al. to measure the effective size r_0 of the vortex cores on optimally doped $YBa_2Cu_3O_{6.95}$ as a function of temperature and magnetic field deep in the superconducting state. The authors found the value of r_0 at $H = 2$ T to be close to 20 \AA and consistent with that measured by STM at 6 T, but a striking increase in r_0 at lower magnetic fields where it approaches a value of about 100 \AA , suggesting that the average value of the superconducting coherence length in the cuprate superconductors may be much larger than previously thought at lower magnetic fields.

A preprint by A. van Otterlo (UC-Davis and Leiden) et al. studies the dynamics of driven vortex matter both numerically and experimentally. The authors use London-Langevin simulations to show that the critical current exhibits a peak both across the Bragg glass to vortex glass transition and across the melting line. The study also finds that the vortex glass to vortex liquid transition is accompanied by a profound linear-to-exponential change of character of the I-V curves. Transport measurements on untwinned YBCO crystals are reported in complete accordance with these findings. It is also found that the effect of the disorder can be well represented with a "shaking temperature" which is inversely proportional to the velocity.

In-plane anisotropy of vortex lattice melting in large $YBa_2Cu_3O_7$ single crystals are investigated in a preprint by T. Ishida (Osaka Prefecture) et al. The authors conclude, according to results of ac susceptibility and dc magnetization studies, that the melting lines are entirely governed by the three-dimensional mass anisotropy and that the liquid phase of the vortex matter in $YBa_2Cu_3O_7$ can be separated into a narrow pinned regime and a wide depinned regime.

The dynamics of vortices within an $YBa_2Cu_3O_{7-\delta}$ low angle grain boundary have been investigated by A. Díaz et al. (IRC) by means of current-voltage measurements with a magnetic field applied in the plane of the boundary. The effect of anisotropy of the superconductor on flux flow is also experimentally investigated.

The dense vortex matter structure and associated magnetization are calculated for a type-II superconducting mesoscopic disk by J. J. Palacios (Kentucky and Autónoma). The magnetization exhibits a first-order phase transition as the number of vortices changes by one, and presents two well-defined regimes: a non-monotonous evolution of the magnitude of the magnetization jumps signals the presence of a vortex glass structure which is separated by a second-order phase transition at H_{C2} from a condensed state of vortices where the magnitude of the jumps changes monotonously. The author asserts that the magnetization exhibits clear traces of the presence of vortex glass states.

$YBa_2Cu_3O_{7-\delta}$

Inhomogeneity of $YBa_2Cu_3O_{7-\delta}$ thin film bridges is investigated in a preprint by M. E. Gaevski (Ioffe) et al. using electron probe microanalysis (EPMA), low-temperature scanning electron microscopy (LTSEM), and magneto-optical flux visualization (MO). The authors determine the profiles of chemical composition, critical temperature, and the critical current density along the bridge. Results show that in low magnetic fields, deviation from the stoichiometric composition leads to a decrease in both critical temperature and critical current density, leading to the conclusion that composition-induced variation in electronic structure influences the critical current density more strongly than appearance of additional pinning centers caused by the deviation from stoichiometry.

The profile of the critical current along the bridge normalized to its value at any point is seen to be almost independent of temperature.

Bi Cuprates

The structural and chemical evolution of bulk *Bi-2212* ceramics while forming a grain microstructure consisting of large needle-shaped grains is reported in a paper by O. Cabeza et al. (LASUAP). A series of samples were treated with incomplete thermal treatments and results analyzed using scanning electron microscopy (SEM), energy dispersed spectroscopy (EDS), inductively coupled plasma (ICP), and x-ray diffraction (XRD) techniques. Measurements of the superconducting properties of the needle-shaped grains yield T_C of 90 K and a critical current density at 77 K greater than 2300 A/cm^2 . The authors indicate that the size, shape, and properties of these needle-shaped grains may be suitable for the construction of improved *Ag*-sheathed wires.

Direct measurements of the density of state by tunneling spectroscopy on *Ni*- and *Zn*-doped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-x}$ are presented in a study by A. Mourachkine (Université Libre) using a break-junction technique. Comparing results with theory, the author finds phenomena which are theoretically predicted for HTS superconductors: stripes, that correlations of the stripes fluctuate, and a Josephson coupling between the stripes. The author speculates that the coupling mechanism on a separate stripe in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-x}$ is likely to be an electron-lattice coupling.

A comparative study of unidirectional columnar defects and isotropic columnar defects in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$ single crystals is reported in a paper by J. H. Cho (Pusan) et al. Both types of defects induce significant enhancements of the irreversibility line and the activation energy. The authors find good scaling of the irreversibility lines and activation energies using the effective matching fields, and for the case of isotropic columnar defects, the effective matching field has a large renormalization effect.

Transport and magnetization J_C was measured by J. N. Li et al. (Wollongong) at various temperature for different groups of *Bi-2223* tapes which were prepared using various processing routes (direct cooling, step cooling, and pressing). In spite of different J_C s in these samples, the field and temperature-dependent pinning force can be described well by a scaling law indicating that the pinning mechanism for these samples is approximately the same.

Two papers by W. Wong-Ng (NIST) et al. discuss the effect of *Pb* in (*Bi,Pb*)-*Sr-Ca-Cu-O* systems for both 2212 and 2223 phases. The first paper discusses the role of liquid in the formation and grain growth of the *Pb-2223* phase under conditions of air and 7.5% O_2 , with and without the presence

of *Ag*. The second paper discusses the determination of the subsolidus phase equilibria and the primary phase field of *Pb*-free 2212 and *Pb-2223* phases.

Phase formation of *Bi-Pb-Sr-Ca-Cu-O* (2223) superconducting materials has been studied by M. Yavuz et al. (Tohoku) for samples produced by thermal co-decomposition and freeze-drying methods under an ambient atmosphere. Phase development and effect of doping were investigated by x-ray diffraction and electron microscopy. It was found that the addition of vanadium enhanced the 2223 phase substantially.

Other Cuprates

Magnetization, pinning force, and magnetic relaxation of twinned and untwinned $\text{Nd}_1\text{Ba}_2\text{Cu}_3\text{O}_y$ (*NBCO*) single crystals were studied in a preprint by A. K. Pradhan et al. (ISTEC). Double peak features are seen on the magnetization curves of the crystals having one type of twin boundaries (TBs) in one direction, and a single peak is observed in crystals either without twins, or with microtwins or mixed twins in both directions. Double peaks disappear when the magnetic field is tilted away from the *c*-axis of the crystal removing the influence of twin boundaries. In the high-field region, due to suppression of thermal fluctuations by the presence of TBs, the relaxation rate in twinned *NBCO* crystals is small and the pinning force density is increased to the *YBCO* and detwinned *NBCO* crystals.

Effect of *Sr* substitution on irreversible properties and lattice dynamics of (*Hg,Pb*)-1223 phases was studied in two papers by S. Lee (Moscow State and Tokyo Institute) et al. The authors find that the flux pinning properties and lattice dynamics are improved by substitutions of *Hg* by *Pb* and *Ba* by *Sr*. Influence of the substitutions on other superconducting properties, irreversibility, and fishtail line are also discussed.

A new series of high- T_C *Cr*-based superconductors have been synthesized by S. M. Loureiro et al. (NIRIM) under 6 GPa pressure and 1250°C - 1350°C temperatures. The superconducting properties change from non-superconducting for the 1201 phase to the highest T_C of 103 K for the 1223 phase.

The hot-press method was employed by H. Yamamoto (Electrotechnical Lab) et al. to synthesize a new family of superconductors $(\text{CuTi})\text{Ba}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+4-y}$. The highest T_C (121 K) sample of $(\text{Cu}_{0.3}\text{Ti}_{0.7})$ -1223 was obtained by hot-press sintering at 1000°C for 3 hours. The samples were highly oriented along the *c* axis.

A series of (*Cu-M*)-1222 cuprates, $(\text{Cu}_{1-x}\text{M}_x)\text{Sr}_2(\text{Y}_{1-y}\text{Ce}_y)_2\text{Cu}_2\text{O}_8$ ($M=\text{Ti, V, Cr, Fe, Co, Ga, Ge, Mo, Ce, W, and Re}$) were synthesized by M. Tamura (Aoyama-Gakuin)

et al. All samples except the one with *Fe* show superconductivity, with the highest T_C (43 K) obtained for the *Re* sample. The authors studied the variation of the transition temperature with crystal structures, and investigated the difference between annealed and as-sintered samples. They point out that the T_C is related to the *M*-element valencies and the *O-Cu-O* angle in the *CuO₂* planes.

Films and Tapes

Pulsed-laser-deposited (PLD) *YBCO* thin films have been deposited on *SrTiO₃* substrates coated by a lattice matching buffer layer by D. Chambonnet et al. (Alcatel Alsthom). The buffer layer, also deposited by PLD, consisted of a graded *La*-doped *CeO₂* layer having the composition *Ce_(1-x)La_xO_{2-x/2}*, the *La* content *x* being decreased from substrate side to *YBCO* side in order to achieve lattice matching at both sides. The authors find in this preliminary study that high-quality *YBCO* films may be obtained by this technique.

Epitaxial buffer layers of *CeO₂* and yttria-stabilized *ZrO₂* (*YSZ*) have been deposited on biaxially textured nickel by F. A. List et al. (Oak Ridge) using conventional electron beam evaporation and rf sputtering; epitaxial films of *YBCO* have then been grown on these buffered substrates. The resulting films demonstrated transport critical current densities of $0.8 \times \text{MA}/\text{cm}^2$ at 77.3 K and $H = 0$ T. The study demonstrates that *ex-situ* deposition of *YBCO* films can be successfully performed on buffered *Ni* that has been exposed to air, and suggests that it may be possible to use more flexible and easily scalable fabrication methods for preparing long *YBCO* conductors.

Biaxially aligned *Y₂O₃* buffer layers have been deposited on cubic textured *Ni* substrates by an electron-beam-deposition technique by A. Ichinose (Central Research Institute) et al. The authors find the crystal orientation of *Y₂O₃* to be very sensitive to the total pressure during deposition. The optimum deposition temperature and pressure are found to be 940°C and 2×10^{-5} Torr respectively. The authors believe the present process will be an attractive and practical one in the fabrication of high- J_C *YBCO* superconducting tapes.

Josephson Junctions

Using the lumped circuit equations, M. Barahona (Stanford) and S. H. Strogatz (Cornell) derive a stability criterion for superconducting pinned states in two-dimensional arrays of Josephson junctions. The analysis neglects quantum, thermal, and inductive effects, but allows disordered junctions, arbitrary network connectivity, and arbitrary spatial patterns of applied magnetic flux and dc current injection.

The authors show that a pinned state is linearly stable only if its corresponding stiffness matrix is positive and definite. This algebraic condition can be used to predict the critical current and frustration at which depinning occurs.

Based on the Ginzburg-Landau theory, J. X. Zhu et al. (TCSUH) have derived a general expression for a Josephson junction made of two superconductors with order parameters of different mixing of d-wave and s-wave symmetry. The authors find that the characteristic phase ϕ_C occurring in the current-phase relation is crucially determined by the two-component order parameter configuration.

Theory

The spinon and holon excitations of two-legged Heisenberg or lightly doped t-J ladders are shown by M. Greiter (Stanford) to be bound in pairs by string confinement forces given approximately by the antiferromagnetic exchange energy across the rungs that originate from the fictitious flux tubes associated with the half-Fermi statistics of the excitations. The author conjectures that similar confinement forces may be responsible for the spin gap and the pairing of charge carriers in copper oxide superconductors.

A quantitative analysis of the critical temperatures $T_C(x)$ for *Nd_{1+x}Ba_{2-x}Cu₃O_y* and *YBa₂Cu₃O_{7-x}* is presented in a paper by L. Jansen (ETH-Hönggerberg) and R. Block (Hoff Institute) on the basis of an earlier proposed first-principle indirect-exchange mechanism of pairing between quasiparticles mediated by closed-shell oxygen anions. A two-component two-phase description is assumed for these systems, one component being stable at low doping, the other at higher doping. It is found that $T_C(x)$ is accurately reproduced for both systems and doping dependence of the quasiparticle Fermi-vector length appears to determine $T_C(x)$ of the *Nd* compound to a high degree of accuracy, whereas in *YBCO*, the development of T_C with oxygen deficiency *x* depends sensitively also on the density of oxygen anions as Cooper-pair mediators. The authors state that, in conformity with earlier applications of the same formalism, the results indicate indirect-exchange pairing as a basic mechanism in high- T_C cuprate superconductivity.

The effect of classical phase fluctuations on the quasiparticle spectra of underdoped cuprate superconductors is studied in a preprint by M. Franz and A. J. Mills (Johns Hopkins). The authors show that photoemission and tunneling spectroscopy data are well accounted for by a simple model in which mean-field d-wave quasiparticles are semiclassically coupled to supercurrents induced by fluctuating unbound vortex-antivortex pairs. The authors argue that the transverse phase fluctuations are important

at temperatures above T_C while longitudinal fluctuations are unimportant at all temperatures.

Applications

A preprint by B. M. Smolyak et al. (Russian Academy) studies the stability of the magnetic suspension of high-temperature superconductors in the inhomogeneous magnetic field of a permanent magnet with application of an alternating magnetic field. The authors measured the critical amplitude vs. field frequency, and the critical frequency and amplitude of the field vs. the distance to the magnet, and present criteria that determine stability of levitation subject to an alternating magnetic field.

Review

A paper by I. Bozovic (Varian), J. N. Eckstein (Urbana), and N. Bozovic (San Jose) provides a review of reflection high energy electron diffraction (RHEED) as a tool for *in-situ*

real-time characterization of the growth of complex oxide systems. The authors have reviewed some less well-known issues specific to RHEED monitoring such as observation of superstructure modulation and twinning, a study of the evolution of long-range order during the growth of thin films of a-axis oriented $DyBa_2Cu_3O_{7-x}$ as a function of atomic mobility on the surface, and a discovery of surface phase transitions induced by the electron beam. The authors also show numerical simulations and comparisons of the calculated RHEED patterns to experimentally observed ones. (32 refs.).

Applications of x-ray diffraction in the high- T_C superconductivity industry are reviewed in a paper by W. Wong-Ng (NIST). The author introduces general characteristics of superconductors and applications of HTS materials, and goes on to detail the application of XRD to bulk materials processing; thick and thin films prepared by RABiTs and IBAD processes; and phase identification, structure determination, and quality of single crystals. (124 refs.).

Contributed by Sreeparna Mitra

Contents: Preprints begin on page 4; Coming Events begin on page 9; FYI is on page 10; and Donors are listed on pages 10 and 11.

High- T_C Update is available without charge to interested persons. Recipients are expected to participate in this information exchange by sending us preprints, reprints, meeting news, research news, etc. Contributions to defray the cost of newsletter printing and mailing are welcome.

PREPRINTS

To obtain a particular preprint, contact the first author at the address given at the end of the citation. Help us expand this list by sending us your complete preprint. **Please specify where and when your paper was submitted.** An * next to an entry indicates it is a correction or revision of a previous entry. PACS codes and/or key words are given at the end of the citation.

Sadhan K. Adhikari and T. Frederico, "Absence of Cooper-Type Bound States in Three- and Few-Electron Systems." To be published in Eur. Phys. J. B. Instituto de Física Teórica, Universidade Estadual Paulista, Rua Pamplona 145, 01405-900 São Paulo, S.P., BRAZIL; telephone +55 11 251 5155; telefax +55 11 288 8224; e-mail adhikari@ift.unesp.br; Web site <http://www.ift.unesp.br>; preprint also available at cond-mat@xxx.lanl.gov (#9805235). 74.20.Fg.

Mauricio Barahona and Steven H. Strogatz, "Pinned States in Josephson Arrays: A General Stability Theorem." To be published in Phys. Rev. B. Ginzton Laboratory, Stanford University, Stanford, CA 94305; e-mail mauricio@loki.stanford.edu; preprint also available at cond-mat@xxx.lanl.gov (#9805405). 74.50.+r; 05.45.+b; 03.20.+i; 85.25.Cp.

Stéphane Belin, Kamran Behnia, and André Deluzet, "Heat Conduction in κ -(BEDT-TTF) $_2$ Cu(NCS) $_2$." Submitted

to Phys. Rev. Lett. Contact Kamran Behnia, Laboratoire de Physique des Solides, Université Paris-Sud, Bâtiment 510, F-91405 Orsay Cedex, FRANCE; e-mail kamran@lps.u-psud.fr.

E. V. Blinov, R. Laiho, E. Lähderanta, Yu P. Stepanov, and K. B. Traito, "Line Shape of the Field Dependence of the Trapped Moment in $Y-Ba-Cu-O$ Superconducting Powders in Low Magnetic Fields: Manifestation of Vortex Polaron." To be published in Physica C (in press). Contact E. Lähderanta, Wihuri Physical Laboratory, University of Turku, FIN-20014 Turku, FINLAND; telefax +358 2 231 9836; e-mail erkki.lahderanta@utu.fi. Key words: magnetic susceptibility, magnetization, flux trapping. 74.25.Ha; 74.80.Bj.

Ivan Bozovic, J. N. Eckstein, and Natasha Bozovic, "Reflection High-Energy Electron Diffraction as a Tool for Real Time Characterization of Growth of Complex Oxides."

To be published in *Characterization of Thin Film Growth Processes via In Situ Techniques*, edited by A. Kraus and O. Auciello (John Wiley & Sons, New York, 1998). Varian Research Center, 3075 Hansen Way, M/S K-114, Palo Alto, CA 94304-1025; telephone (650) 424-6358; telefax (650) 424-6988; e-mail ivan.bozovic@grc.varian.com.

O. Cabeza, O. Barca, and F. Miguélez, "Development of Needle-Shaped Grains from $Bi_2Sr_2CaCu_2O_{8+x}$ with High Critical Current Density Suitable for Making Superconducting Wires." To be published in *Appl. Supercond.* (in press). LASUAP, Departamento de Física, Facultad de Ciencias, Universidad de A Coruña, E-15071 A Coruña, SPAIN.

Ken Cappon, "High Temperature Superconductivity in the 2D t-J Model at Metal-Insulator Transition: Variational Mean Field Results." Principia Microsystems Inc., 12 Caines Avenue, Toronto, Ontario, CANADA M2M 1G2; e-mail kenc@princip.com; preprint also available at cond-mat@xxx.lanl.gov (#9806035).

Y. S. Cha and T. R. Askew, "Transient Response of a High-Temperature Superconductor Tube to Pulsed Magnetic Fields." To be published in *Physica C* (in press). Energy Technology Division, Argonne National Laboratory, Argonne, IL 60439. Key words: superconductor tube, pulsed magnetic fields, excitation current.

D. Chambonnet, D. Keller, and C. Belouet, "Control of the 2D/3D Transition of the Growth Mechanism in the $YBCO/Ce_{1-x}La_xO_{2-x/2}/SrTiO_3$ System." To be published in *Physica C* (in press). Alcatel Alstom Corporate Research Center, Route de Nozay, F-91460 Marcoussis, FRANCE. Key words: grain alignment (texturing), granular superconductivity, heteroepitaxy, pulsed-laser-assisted deposition (PLD), scanning force microscopy, thin films, *YBCO*. 74.76.Bz; 74.80.Bj; 81.15.Fg.

J. H. Cho, H. Safar, M. P. Maley, J. O. Willis, J. Y. Coulter, D. G. Steel, and K. E. Gray, "Effects of Unidirectional and Isotropic Columnar Defects in $Bi_2Sr_2CaCu_2O_8$ Single Crystals." To be published in *Physica C* (in press). RCDAMP and Department of Physics, Pusan National University, Jangjun-Dong 30, Kumjeong-Ku, Pusan 609-735, SOUTH KOREA; telephone +82 51 510 2968; telefax +82 51 515 2390; e-mail jinhcho@hyowon.pusan.ac.kr. Key words: $Bi_2Sr_2CaCu_2O_8$ single crystals, columnar defects, irreversibility lines. 74.60.Ge; 74.62.Dh; 74.60.Jg; 74.72.Hs.

A. Díaz, L. Mechin, P. Berghuis, and J. E. Evetts, "Observation of Viscous Flux Flow in $Y_1Ba_2Cu_3O_{7-\delta}$ Low-Angle Grain Boundaries." To be published in *Phys. Rev. B*. Department of Materials Science and Metallurgy and IRC in Superconductivity, University of Cambridge, Pembroke Street, Cambridge CB2 3QZ, UNITED KINGDOM; telephone

+44 1223 334375; telefax +44 1223 334373; e-mail ad228@cus.cam.ac.uk. 74.60.Ge; 74.25.Ha; 74.72.Bk.

D. Djajaputra and J. Ruvalds, "On the Hubbard Model at Half Filling." Department of Physics, University of Virginia, McCormick Road, Charlottesville, VA 22901; J. Ruvalds' telephone (804) 924-6796; telefax (804) 924-4576; e-mail jr7k@virginia.edu. Key words: Hubbard model, particle-hole symmetry, nesting.

M. Franz and A. J. Millis, "Phase Fluctuations and Spectral Properties of Underdoped Cuprates." Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD 21218; e-mail franz@pha.jhu.edu; preprint also available at cond-mat@xxx.lanl.gov (#9805401).

M. E. Gaevski, A. V. Bobyl, D. V. Shantsev, R. A. Suris, V. V. Tret'yakov, Y. M. Galperin, and T. H. Johansen, "Spatially-Resolved Studies of Chemical Composition, Critical Temperature, and Critical Current Density of $YBa_2Cu_3O_{7-\delta}$ Thin Film." Submitted to *J. Appl. Phys.* Ioffe Physico-Technical Institute, Polytechnicheskaya 26, St. Petersburg 194021, RUSSIA; D. V. Shantsev's telephone +7 812 247 9367; telefax +7 812 247 1017; e-mail shantsev@theory.ioffe.rssi.ru; preprint also available at cond-mat@xxx.lanl.gov (#9806052). 74.76.Bz; 74.62.Bf; 74.62.-c; 74.60.Jg; 78.20.Ls.

Martin Greiter, "Fictitious Flux Confinement: Magnetic Pairing in Coupled Spin Chains or Planes." Department of Physics, Stanford University, Stanford, CA 94305; telephone (650) 857-0506; telefax (650) 723-9389; e-mail greiter@quantum.stanford.edu; preprint also available at cond-mat@xxx.lanl.gov (#9805112). 71.10.-w; 75.10.-b; 74.72.-h; 74.20.-z.

C. Grimaldi, L. Pietronero, and M. Scattoni, "The Physical Origin of the Electron-Phonon Vertex Correction." Department of Physics, University of Rome "La Sapienza", Piazzale A. Moro 2, I-00185 Rome, ITALY; telephone +39 6 4991 3450; telefax +39 6 446 3158; e-mail claudio@pil.phys.uniroma1.it; preprint also available at cond-mat@xxx.lanl.gov (#9806012). 63.20.Kr; 71.38.+i; 74.20.Mn.

V. G. Hadjiev, T. Strohm, M. Cardona, Z. L. Du, Y. Y. Xue, and C. W. Chu, "Raman Scattering from the Superconducting Phase: Electronic Excitations and Phonon Renormalization Effects." Preprint #98:048; submitted to the Proc. of the Symp. on Applications of Spectroscopy to Supercond. Mater., 215th Nat. Amer. Chem. Soc. Mtg., Dallas, Texas, March 29-April 3, 1998. Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, D-70569 Stuttgart, GERMANY; preprint also available from Texas Center for Superconductivity, University of Houston, Houston, TX 77204-5932; telephone (713) 743-8200; telefax (713) 743-8201; e-mail preprints@www.tcs.uh.edu.

S. Horii, Y. Yamada, H. Ikuta, N. Yamada, Y. Kodama, S. Katano, Y. Funahashi, S. Morii, A. Matsushita, T. Matsumoto, I. Hirabayashi, and U. Mizutani, "Synthesis and Superconducting Properties of $(Y_{1-x}Pr_x)Ba_2Cu_4O_8$ and $(Y_{1-x}Pr_x)_2Ba_4Cu_7O_{15-y}$ Compounds." To be published in Physica C (in press). Department of Crystalline Materials Science, Nagoya University, Nagoya 464-01, JAPAN. Key words: $(Y_{1-x}Pr_x)Ba_2Cu_4O_8$, $(Y_{1-x}Pr_x)_2Ba_4Cu_7O_{15-y}$, synthesis, substitution effect of *Pr*.

R. D. Hunt, E. C. Beahm, and G. F. Voronin, "Partial Oxygen Pressure and Temperature Effects on the Oxygen Content of the *Y-Ba-Cu-O* Melts." To be published in Physica C (in press). Oak Ridge National Laboratory, Oak Ridge, TN 37831. Key words: oxygen stoichiometry, structural phase transition, phase diagram.

Ataru Ichinose, Akihiro Kikuchi, Kyoji Tachikawa, and Shirabe Akita, "Deposition of Y_2O_3 Buffer Layers on Biaxially Textured Metal Substrates." To be published in Physica C (in press). Central Research Institute of Electric Power Industry, Komae Research Laboratory, 2-11-1 Iwato Kita, Komae, Tokyo 201-8511, JAPAN. Key words: biaxial alignment, buffer layer, Y_2O_3 , cubic-textured *Ni* tape, pole figure.

Takekazu Ishida, Kiichi Okuda, Alexandre I. Rykov, Setsuko Tajima, and Ichiro Terasaki, "In-Plane Anisotropy of Vortex Lattice Melting in Large $YBa_2Cu_3O_7$ Single Crystals." To be published in Phys. Rev. B. Department of Physics and Electronics, Osaka Prefecture University, Sakai, Osaka 599-8531, JAPAN. 74.60.Ge; 74.72.Bk.

Takanori Itoh, Kazuo Fueki, Yasumoto Tanaka, and Hideo Ihara, "Optical Absorption Spectra and Electronic Structure of $Bi_2(La_{1-x}Sr_x)_2CuO_y$." To be published in Physica C (in press). Department of Industrial Chemistry, Faculty of Science and Technology, Science University of Tokyo, 2641 Yamazaki, Noda-shi, Chiba 278, JAPAN. Key words: $Bi_2(La_{1-x}Sr_x)_2CuO_y$, spin-coating pyrolysis method, thin film, excess oxygen content, absorption coefficient, effective hole number, electronic structure.

Yutaka Itoh, Ayako Tokiwa-Yamamoto, Takato Machi, and Keiichi Tanabe, "*Cu* NMR Study of Bilayer $HgBa_2CaCu_2O_{6+\delta}$: Variation of Pseudo Spin-Gap Spectrum." To be published in J. Phys. Soc. Jpn. Superconductivity Research Laboratory, International Superconductivity Technology Center (ISTEC), 10-13 Shinonome 1-chome, Koto-ku, Tokyo 135, JAPAN; telephone +81 3 3536-5703 through -5705; telefax +81 3 3536-5714 or -5717. Key words: NMR, pseudo spin gap, $HgBa_2CaCu_2O_{6+\delta}$, high- T_C cuprates, bilayer cuprate.

L. Jansen and R. Block, "Indirect-Exchange Coupling as a Basic Pairing Mechanism of High-Temperature

Superconductivity: Quantitative Analysis of $T_C(x)$ in Electron-Doped $Nd_{1+x}Ba_{2-x}Cu_3O_y$ and $YBa_2Cu_3O_{7-x}$." To be published in Physica A. Institut für Theoretische Physik, ETH-Hönggerberg, CH-8093 Zürich, SWITZERLAND; telefax +41 1 633 1115; e-mail jansen@itp.phys.ethz.ch.

V. M. Krasnov, N. Mros, A. Yurgens, and D. Winkler, "Magnetic Field Dependence of the Critical Current in Stacked Josephson Junctions: Evidence for Fluxon Modes in $Bi_2Sr_2CaCu_2O_{8+x}$ Mesas." Department of Physics, Chalmers University of Technology, S-41296 Göteborg, SWEDEN; e-mail krasnov@fy.chalmers.se; preprint also available at cond-mat@xxx.lanl.gov (#9805378). 74.80.Dm; 74.50.+r.

H. Küpfer, Th. Wolf, C. Lessing, A. A. Zhukov, X. Lancon, R. Meier-Hirmer, W. Schauer, and H. Wühl, "The Peak Effect and Its Evolution from Oxygen Deficiency in $YBa_2Cu_3O_{7-\delta}$ Single Crystals." To be published in Phys. Rev. B. Forschungszentrum Karlsruhe, Institut für Technische Physik, Postfach 3640, D-76021 Karlsruhe, GERMANY. 74.60.Ge; 74.60.Jg; 74.72.Bk.

Sergey Lee, T. Akao, H. Suematsu, H. Yamauchi, N. P. Kiryakov, M. S. Kuznetsov, D. A. Emelyanov, and Yu. D. Tretyakov, "Effect of *Pb* and *Sr* Substitutions on Irreversibility and Fishtail Lines of *Hg-1223* Phase: Powder, Ceramic and Single Crystal Studies." To be published in the Proc. of the NATO Int. Workshop on High Temp. Supercond. and Novel Inorganic Mater. Eng. (MSU-HTSC V), Moscow, Russia, March 24-29, 1998. Contact H. Yamauchi, Materials & Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 227, JAPAN; telephone +81 45 924 5315; telefax +81 45 924 5365; e-mail yamauchi@materia.titech.ac.jp.

Sergey Lee, N. P. Kiryakov, D. A. Emelyanov, M. S. Kuznetsov, Yu. D. Tretyakov, V. V. Petrykin, M. Kakihana, H. Yamauchi, Yi Zhuo, Mun-Seog Kim, and Sung-Ik Lee, "Effect of *Sr* Substitution on Irreversibility Line, Lattice Dynamics and Formation of *Hg,Pb-1223* Superconductors." To be published in Physica C. Contact H. Yamauchi, Materials & Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 227, JAPAN; telephone +81 45 924 5315; telefax +81 45 924 5365; e-mail yamauchi@materia.titech.ac.jp. Key words: *Hg*-based superconductors, *Hg-1223* phase, substitutions, irreversibility line, encapsulation technique, spray-drying, screen-printing, thick films, Raman spectroscopy. 74.72.Jt.

J. N. Li, H. K. Liu, and S. X. Dou, "Comparison of Pinning Behavior in *Bi-2223/Ag* Tapes with Various Preparing Processing." Submitted to Physica C. Institute for Superconducting and Electronic Materials, University of Wollongong, Wollongong NSW 2522, AUSTRALIA.

F. A. List, A. Goyal, M. Paranthaman, D. P. Norton, E. D. Specht, D. F. Lee, and D. M. Kroeger, "High J_C YBCO Films on Biaxially Textured Ni with Oxide Buffer Layers Deposited Using Electron Beam Evaporation and Sputtering." To be published in Physica C (in press). Metals and Ceramics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6068. Key words: YBCO, thin films, applications of high- T_C superconductors, epitaxy.

S. M. Loureiro, Y. Matsui, E. Takayama-Muromachi, "New Series of High- T_C Cr-Based Superconductors." To be published in Physica C (in press). Contact E. Takayama-Muromachi, National Institute for Research in Inorganic Materials (NIRIM), Namiki 1-1, Tsukuba, Ibaraki 305-0044, JAPAN. Key words: high- T_C superconductors, HRTEM, electric resistivity, magnetic susceptibility.

L. Méchin, P. Berghuis, and J. E. Evetts, "Properties of $YBa_2Cu_3O_{7-\delta}$ Thin Films Grown on Vicinal $SrTiO_3$ (001) Substrates." To be published in Physica C (in press). Faculty of Applied Physics, Low Temperature Division, University of Twente, P.O. Box 217, 7500 AE Enschede, THE NETHERLANDS; telephone +31 53 489 3079; telefax +31 53 489 1099; e-mail l.l.mechin@tn.utwente.nl. Key words: $YBa_2Cu_3O_{7-\delta}$, $SrTiO_3$, vicinal, step bunching, step flow growth. 68.55.-a; 74.76.-w.

B. Morosin, E. L. Venturini, R. G. Dunn, P. Newcomer Provencio, N. Missert, R. R. Padilla, "Structural and Compositional Characterization of Rubidium-Containing Crystals of the $Tl-Ba-Ca-Cu-O$ Superconductors." To be published in Physica C (in press). Sandia National Laboratories, Albuquerque, NM 87185-1421. Key words: single crystal structure determinations, $Tl-Ba-Ca-Cu-O$ superconductors, rubidium-containing crystals.

A. Mourachkine, "On the Mechanism of Superconductivity in HTSC from Tunneling Spectroscopy Measurements on $Bi_2Sr_2CaCu_2O_{8-x}$ Single Crystals." Submitted to Phys. Rev. Lett. Service Physique des Solides, Université Libre de Bruxelles, CP233, Boulevard du Triomphe, B-1050 Brussels, BELGIUM; telephone +32 2 650-5751 or -5753; telefax +32 2 650-5916. 74.50.+r; 74.40.+k; 74.62.Dh; 74.72.Hs.

D. Münter, T. Doderer, H. Pressler, S. Keil, and R. P. Huebener, "Fluxon Pinning Through Interaction with the Superconducting Wiring of Long Annular Josephson Junctions." To be published in Phys. Rev. B. Physikalisches Institut, Lehrstuhl Experimentalphysik II, Universität Tübingen, Auf der Morgenstelle 14, D-72076 Tübingen, GERMANY; S. Keil's e-mail stephan.keil@brahms.pit.physik.uni-tuebingen.de; preprint also available at cond-mat@xxx.lanl.gov (#9805173). Key words: Josephson junction, pinning, low temperature scanning electron microscopy. 74.50.+r; 74.60.Ge; 61.16.Bg.

M. Nagase, J. Lindén, J. Miettinen, M. Karppinen, and H. Yamauchi, "Layered (Cu,Fe) Oxides of Double Perovskite Structure: Correlation Between Structural and Magnetic-Property Changes in $BaY(Cu_{0.5}Fe_{0.5})_2O_{5+\delta}$ Upon High-Pressure Heat Treatment." To be published in Phys. Rev. B. Contact H. Yamauchi, Materials & Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 227, JAPAN; telephone +81 45 924 5315; telefax +81 45 924 5365; e-mail yamauchi@materia.titech.ac.jp. 74.25.Fy; 74.25.Ha; 74.60.Jg; 74.62.Dh.

J. J. Palacios, "Vortex Matter in Superconducting Mesoscopic Disks: Structure, Magnetization and Phase Transitions." Departamento de Física Teórica de la Materia Condensada, Universidad Autónoma de Madrid, Cantoblanco, E-28049 Madrid, SPAIN; e-mail palacios@kim.fmc.uam.es; preprint also available at cond-mat@xxx.lanl.gov (#9806056). 74.60.Ec; 74.76.-w.

M. Pekala, H. Bougrine, W. Gadomski, C. G. Morgan, C.R.M. Grovenor, R. Cloots, and M. Ausloos, "Distribution of Vortex Lattice Melting Temperatures in Mixed State Diagram of $Bi2212$ Tapes." To be published in Physica C. Department of Chemistry, University of Warsaw, Al. Zwirki i Wigury 101, PL-02-089 Warsaw, POLAND.

A. K. Pradhan, K. Kuroda, B. Chen, and N. Koshizuka, "Study of the Influence of Twin Boundaries on the Flux Pinning in $Nd_1Ba_2Cu_3O_y$ Single Crystals." To be published in Phys. Rev. B. Superconductivity Research Laboratory, International Superconductivity Technology Center (ISTEC), 10-13 Shinonome 1-chome, Koto-ku, Tokyo 135, JAPAN; telephone +81 3 3536-5703 through -5705; telefax +81 3 3536-5714 or -5717; e-mail pradhan@istec.or.jp. 74.25.Ha; 74.60.Ge; 74.60.Jg.

Hai-Cang Ren, "An Analytical Approach to the Pseudo-Gap in Boson-Fermion Model and Its Possible Relevance to Cuprate Superconductors." To be published in Physica C (in press). Department of Physics, Rockefeller University, New York, NY 10021-6399. Key words: pseudo-gap, Boson-Fermion model, cuprate superconductor.

S. Sasaki, A. Matsuda, and C. W. Chu, " ^{39}K -NMR Observation of Temperature-Dependent Spin Susceptibility in K_3C60 ." Preprint #98:045; to be published in Physica C. NTT Basic Research Laboratories, 3-1 Morinosato-Wakamiya, Atsugi-shi, Kanagawa 243-0198, JAPAN; telephone +81 462 403537; telefax +81 462 702364; e-mail sasaki@will.brl.ntt.co.jp; preprint also available from Texas Center for Superconductivity, University of Houston, Houston, TX 77204-5932; telephone (713) 743-8200; telefax (713) 743-8201; e-mail preprints@www.tcs.uh.edu. Key words: ^{39}K NMR, K_3C60 , NMR shifts, Pauli spin susceptibility, conduction-electron density, band effect, T' site.

J. M. Singer and P. F. Meier, "Knight Shift in the Attractive Hubbard Model: Crossover Regime." To be published in *Physica C* (in press). Physik-Institut, Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich, SWITZERLAND; telephone +41 1 635 4017; telefax +41 1 635 5704; e-mail jms@physik.unizh.ch. Key words: high- T_C cuprates, NMR, crossover regime.

B. M. Smolyak, M. V. Babanov, G. V. Ermakov, I. B. Smolyak, and S. V. Naumov, "The Instability of Levitation of High-Temperature Superconductors Subject to an Alternating Magnetic Field." To be published in *Physica C* (in press). Institute of Thermal Physics, Russian Academy of Sciences, 91 Pervomaiskaya Str., 620219 Yekaterinburg, RUSSIA. Key words: superconductors, levitation stability.

J. E. Sonier, R. F. Kiefl, J. H. Brewer, D. Bonn, S. Dunsiger, R. Liang, R. I. Miller, D. R. Noakes, and C. E. Stronach, "Expansion of the Vortex Cores in $YBa_2Cu_3O_{6.95}$ at Low Magnetic Fields." Los Alamos National Laboratory, Los Alamos, NM 87545; e-mail jsonier@mst.lanl.gov; preprint also available at cond-mat@xxx.lanl.gov (#9806064). 74.25.Jb; 74.60.Ec; 74.60.-w; 74.72.Bk; 76.75.ii.

A. Stegmans, R. Provoost, R. E. Silverans, and V. V. Moshchalkov, "NMR Decoration Study of the Mixed State in Oxygen-Deficient $YBa_2Cu_3O_x$." To be published in *Physica C* (in press). Contact R. Provoost, Laboratorium voor Vaste-Stoffysica en Magnetisme, Katholieke Universiteit Leuven, Celestijnenlaan 200D, B-3001 Leuven, BELGIUM; telephone +32 16 327120; telefax +32 16 327983; e-mail rik.provoost@fys.kuleuven.ac.be. Key words: NMR, mixed state, penetration depth, flux lattice, $YBa_2Cu_3O_x$. 74.72.Bk; 74.25.Ha; 76.60.Jx.

M. Tamura, M. Sato, T. Den, and J. Akimitsu, "A New Superconductor with 1222 Structure ($Cu_{1-x}M_x$) $Sr_2(Y_{1-y}Ce_y)_2Cu_2O_\delta$ ($M = Ti, V, Cr, Fe, Co, Ga, Ge, Mo, Ce, W$ and Re)." To be published in *Physica C* (in press). Department of Physics, Aoyama-Gakuin University, Setagaya-ku, Tokyo 157, JAPAN. Key words: superconductor, cuprates, $Cu1222$ structure.

Anne van Otterlo, Richard T. Scalettar, Gergely T. Zimányi, Robert Olsson, Andra Petrean, Wai Kwok, and Valerii Vinokur, "Dynamic Phases and the Peak Effect in Dirty Type II Superconductors." Submitted to *Phys. Rev. Lett.* Instituut-Lorentz, Leiden University, P.O. Box 9506, NL-2300 RA Leiden, THE NETHERLANDS; preprint also available from Janice Coble, Materials Science Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439; telephone (630) 252-5497; telefax (630) 252-9595; e-mail coble@anl.gov. 74.25.Dw; 74.60.Ge; 74.60.Jg.

W. G. Wang, Y.-L. Liu, Z. Han, and P. Vase, "Critical Current and Microstructure of $Bi-2223$ Tapes." To be presented at the 1998 Int. Workshop on Supercond.: Mater. and Technol. Issues for HTS Wires and Bulk Applications, Okinawa, Japan, July 12-15, 1998. Nordic Superconductor Technologies A/S, Prioparken 878, DK-2605 Brøndby, DENMARK; telephone +45 43 482506; telefax +45 43 482501; e-mail w.wang@nst.com.

Winnie Wong-Ng, "XRD Applications in the High- T_C Superconductor Industry." To be published in *Industrial Applications of X-Ray Diffraction*, edited by D. K. Smith and F. Chung (Marcel Dekker Pub., in press). A215 MATLS, National Institute of Standards and Technology, Gaithersburg, MD 20899; telephone (301) 975-5791; telefax (301) 975-5334; e-mail winnie.wong-ng@nist.gov.

W. Wong-Ng, L. P. Cook, and W. Greenwood, "Effect of PbO_2 and Ag on the Phase Formation of the $Pb-2223$ Superconductor." Submitted to *J. Mater. Res.* A215 MATLS, National Institute of Standards and Technology, Gaithersburg, MD 20899; telephone (301) 975-5791; telefax (301) 975-5334; e-mail winnie.wong-ng@nist.gov.

W. Wong-Ng, L. P. Cook, A. Kearsley, G. Lawrence, and W. Greenwood, "Phase Equilibria of the $(Bi,Pb)-Sr-Ca-Cu-O$ System Pertaining to the 2212 and 2223 Phases." Submitted to the Proc. of the NATO Int. Workshop on High Temp. Supercond. and Novel Inorganic Mater. Eng. (MSU-HTSC V), Moscow, Russia, March 24-29, 1998. A215 MATLS, National Institute of Standards and Technology, Gaithersburg, MD 20899; telephone (301) 975-5791; telefax (301) 975-5334; e-mail winnie.wong-ng@nist.gov.

H. Yamamoto, K. Tanaka, K. Tokiwa, H. Hirabayashi, M. Tokumoto, Nawazish A. Khan, and H. Ihara, "Synthesis of $Cu_{1-x}Tl_xBa_2Ca_2Cu_3O_{11-y}$ ($x \sim 0.7$) Superconductor by Hot Press." To be published in *Physica C* (in press). Electrotechnical Laboratories, 1-1-4 Umezono, Tsukuba, Ibaraki 305-8568, JAPAN. Key words: superconductor, hot press, sintering.

Mustafa Yavuz, Hakim Faqir, and Hiroshi Maeda, "Phase Development of High Temperature $Bi-2223$ Phase and Effect of Doping on Formation Rate." To be published in the Proc. of the Int. Soc. for Optical Engineering (SPIE) Meeting, Orlando, Fla., April 21-22, 1997. Institute for Materials Research, Tohoku University, Katahira 2-1-1, Sendai 980-77, JAPAN; telephone +81 22 215 2705; telefax +81 22 215 2071; e-mail myavuz@imr.tohoku.ac.jp. Key words: $Bi-2223$ bulk superconductors, high temperature phase, doping effect.

Tetsuo Yoshida, Ken-ichi Sata, Ken Yoshii, Yoon-Myung Kang, and Akifumi Suzuki, "A Cryocooled 61-Channel MEG System." To be published in *Appl. Supercond.* (in press).

Contact Yoon-Myung Kang, MEC Laboratory, Daikin Industries Ltd., 3 Miyukigaoka, Tsukuba 305-0841, JAPAN.

D.-W. Yuan, M. J. Pollock, and J. Kajuch, "Effect of Rolling on Properties of Monofilamentary *Bi-2212* Superconductor Tapes." To be published in *Physica C* (in press). Concurrent Technologies, 1450 Scalp Avenue, Johnstown, PA 15904; telephone (814) 269-2508; telefax (814) 269-2799. Key words: *Bi-2212*, tape rolling, critical current density.

J. X. Zhu, W. K. Kim, and C. S. Ting, "Vortex State in Unconventional Junctions of Superconductors with $d+is$ Symmetry." Preprint #98:047; to be published in *Phys. Rev. B*. Texas Center for Superconductivity, University of Houston, Houston, TX 77204-5932; telephone (713) 743-8200; telefax (713) 743-8201; e-mail preprints@www.tcs.uh.edu. 74.20.De; 74.50.+r.

COMING EVENTS

(An * indicates a previously listed event.)

Sept. 14 - 26, 1998: Third Training Course in the Physics of Correlated Electron Systems and High- T_C Superconductors, Vietri sul Mare, Salerno, Italy. The School, aimed at postdoctoral-level researchers, will offer opportunity for students to meet experts in various fields of strongly correlated electron systems. The proposed project of practical training courses intends to promote the theoretical research in the field of highly correlated electron systems by putting together senior researchers with experience and skill and young researchers. The courses will be open to a limited number (25) of young European researchers. Registration fee: \$250. Limited number of grants for European researchers covering part of the costs will be available. Topics are: electron-phonon coupled systems (polaronic systems), high- T_C cuprates, manganates, dynamical mean field theory, (quantum impurity models, large spatial coordination, Falikov-Kimball model, Anderson impurity model, and Mott transition), and Green's function Monte Carlo for strongly correlated systems. **Application deadline, July 20, 1998.** Application form and grant request form are available from Prof. F. Mancini, Dipartimento di Scienze Fisiche "E. R. Caianiello", Universita' di Salerno, Via S. Allende, 84081 Baronissi (SA), Italy; telephone +39 89 965 322; telefax +39 89 965 275; e-mail mancini@vaxsa.csied.unisa.it.

***Sept. 16 - 19, 1998:** First International Conference on Inorganic Materials – Synthesis, Characterization, Properties and Applications of Inorganic Materials, Palais des Congrès de Versailles, France. Conference will cover topics of interest in inorganic materials that demonstrate unusual properties which may lead to new applications. Will comprise of six sessions and two poster sessions. Contributions on the latest scientific

and technological results will be supplemented by a number of high-level invited presentations and reviews by experts in these fields. Poster and oral contributions are invited in the following areas: Electronic Materials – includes systems that exhibit superconductivity, colossal magnetoresistance, or that might find applications in batteries, sensors, or optical devices, etc.; Structural Materials and Ceramics – includes materials that are used for high-temperature applications, composites, ferroelectrics, and materials that exhibit low dielectric or unusual temperature-dependent properties; Simulation of Inorganic Materials – includes applications of both force-field methods and first-principle techniques to inorganic materials as well as the interplay between computer simulation and experiment; Biomaterials – will include studies on biominerals, biomimetic systems, inorganic-based biosensors, and bioinspired materials; Porous Materials – will include crystalline nanoporous materials such as zeolites and related phases, surfactant-mediated materials, and noncrystalline nanoporous inorganics. Official language is English. A table-top exhibition will be run in conjunction with the conference. For information, contact Sue Stewart, First International Conference on Inorganic Materials Secretariat, 4 Manor Farm Barns, Church Lane, Charlton-on-Otmoor, Kidlington, Oxon OX5 2UA, United Kingdom; telephone +44 1865 331040; telefax +44 1865 331125; e-mail 101515.2472@compuserve.com.

Nov. 9 - 20, 1998: 43rd Annual Conference on Magnetism and Magnetic Materials, Hotel InterContinental, Miami, Fla. This conference will include all basic and applied science and technology related to the field of magnetism. Topics are: fundamental properties and cooperative phenomena, transport properties, computational magnetism and imaging, soft magnetic materials and applications, hard magnetic materials and applications, structured materials, other magnetic materials, magnetic recording, applications, and interdisciplinary topics. For information, contact Conference Coordinators at Courtesy Associates; telephone (202) 973-8668; telefax (202) 973-8722; e-mail magnetism@courtesyassoc.com; Web site <http://www.ieee.org/society/mag> or <http://www.aip.org/pubserv.html>.

***Nov. 16 - 19, 1998:** 11th International Symposium on Superconductivity (ISS'98), Fukuoka Sunpalace Hotel, Fukuoka, Japan. Organized by the International Superconductivity Technology Center (ISTEC). Symposium will consist of oral and poster sessions and invited talks in the following topics: Physics – theory, physical properties, and new measurement techniques; Chemistry – new materials and syntheses, substitution, solid-state chemistry, and properties; Critical Current – flux-pinning mechanism, vortex physics, and weak links; Wires, Tapes, and Bulk – solid-state powder ceramics, chemical-solution processing, melting solidification, and chemical-vapor deposition; Films and Junctions –

processing, properties, lithography, junction fabrication, and physics; Device Applications – digital, analog, SQUID, and other electronic devices; System Applications – power, power transportation, magnets, magnetic shields, and other system applications; Standardization – standardization for electromagnetic, mechanical, and microwave properties measurements. Will also include exhibition of materials and devices. Proceedings to be published. Official language is English. For further information, contact ISS'98 Secretariat, ISTEK, Eishin Kaihatsu Bldg. 6F, 34-3 Shimbashi 5-chome, Minato-ku, Tokyo 105-0004, Japan; telephone +81 3 3431 4002; telefax +81 3 3431 4044.

***May 30 - June 3, 1999:** 10th International Symposium on Intercalation Compounds (ISIC 10), Okazaki, Japan. Tenth in the series. Will focus on basic ideas in both the physics and chemistry of intercalation materials such as graphite, fullerenes, carbon nanotubes, chalcogenides, oxides, clays, zeolites, and other related materials. Topics to be covered: new intercalation compounds and new synthetic routes; thermodynamics, kinetics, and reaction mechanisms; structure and lattice dynamics; phase transitions; electronic properties, charge transfer, and band structures; transport properties and superconductivity; magnetic properties; electrochemical properties; intercalation electrodes for advanced batteries; and other present and potential applications. Scientific program will consist of plenary lectures as well as oral and poster sessions. Proceedings to be published as a special issue of *Molecular Crystals and Liquid Crystals*. **Abstract deadline, December 15, 1998.** For further information, contact Toshiaki Enoki, ISIC 10, Department of Chemistry, Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo 152-8551, Japan; telefax +81 3-5734 2242; e-mail isic@chem.titech.ac.jp; Web site <http://www.chem.titech.ac.jp/~isic/>.

July 28 - Aug. 2, 1999: International Conference on Physics and Chemistry of Molecular and Oxide Superconductors (MOS99), Stockholm, Sweden. Satellite to the LT-22 Conference in Helsinki, Finland (Aug. 4 - 11, 1999). Contributions within all aspect of the physics and chemistry of molecular and oxide superconductors will be welcome, including: electronic properties, theory, optical properties, lattice dynamics, phonons, electrical properties, thermal properties, critical currents, vortex structure and dynamics, Josephson effects, thin films, material properties, borocarbides, ruthenides, fullerenes, organic superconductors, new superconducting materials, and applications. **Abstract deadline, March 1, 1999.** For information, contact Conference Service Bureau, Congrex Sweden AB, Attn. MOS 99, P.O. Box 5619, SE-114 86 Stockholm, Sweden; telephone + 46 8 459 6600; telefax + 46 8 661 9125; e-mail mos99@congrex.se; Web site <http://www.mos99.kth.se>.

FYI

(*High-T_C Update* takes no responsibility for want ads listed in this section.)

Positions Open: Nordic Superconductor Technologies (NST), a corporation that develops, produces, and sells high-temperature superconducting tapes for the global market, solicits applications from engineers and scientists (with or without management experience) for the areas specified below. All positions are related to optimization of powder-in-tube (PIT) *Bi-2223* tapes. Openings in the Mechanical Process Group will involve increasing superconducting fill factor in tapes; improving stress and strain performance of tapes; and developing and testing of alloy sheath materials, twisted tapes, and isolated filaments. Openings in the Thermal Process Group will include work on *Bi-2223* phase, texture development, and heat treatment of PIT *Bi-2223* tapes. Openings in the Quality Group will involve work on measurements of critical currents by transport methods and contact-free techniques, measurements of ac losses, and stress/strain performance. Send written application to Per Vase, Vice President Engineering, Nordic Superconductor Technologies A/S, Priorparken 878, 2605 Brøndby, Denmark; telephone +45 43483592; telefax +45 43482501; e-mail p.vase@nst.com or p.vase@nst.com.

T_C DONORS

We wish to thank the following for their contribution/subscription donations to *High-T_C Update*. If you wish to help support the newsletter, please send a check **in dollars**, made out to *High-T_C Update*, to Sreeparna Mitra, Editor, *High-T_C Update*, A219 Physics, ISU, Ames, IA 50011-3020. We are listing donations received since October 1, 1997.

Active: (\$10-\$199)

W. N. Mei	Thomas Abraham
James S. Schilling	Robert J. Gottschall
A. F. Hebard	John Huber
Roy Weinstein	M. Tinkham
Shome N. Sinha	Michael J. Naughton
E. D. Specht	Mark Ruckman
Ray Ellis	Amar Nath
Marc J. Feldman	Franco Nori
Lawrence Montgomery	C. Vipulanandan
Kazumi Maki	R. S. Markiewicz
S. C. Cheng	Xiaoxing Xi
Félix Miranda	Arthur F. Greene, Jr.
Thomas Lee Elifritz	John Markert
Daniel Haskel	R. C. Hansen, Inc.
Kees Van Der Beek	Milan Lelovic
Youwen Xu	Theodora Leventouri
Wei Jiang Yeh	A. I. Schindler

Anonymous Friend 11
 Hisashi Sato
 Kazumasa Togano
 John A. Wilson
 John Tranquada
 Teruo Suzuki
 Keith Johnson
 Yakov Eckstein
 Theodore H. Geballe
 T. Van Duzer
 Phillip Wahlbeck
 Prem Vaishnava
 Marvin Tetenbaum
 Allen M. Hermann
 Carolus Boekema
 D. J. Scalapino
 Jochen Mannhart
 Isidoro Rasines
 Ennis Ogawa
 S. M. Bose
 M. B. Maple
 Kentaro Setsune
 Harold P. Fritzer
 Steven M. Anlage
 J. J. Rodríguez-Núñez
 M. Barmawi
 Baird Brandow
 A. M. Tremblay
 Masashi Kawasaki
 K. A. Geiger
 Laura H. Greene
 George J. Valco
 Karlheinz Schwarz
 John M. Rowell
 Nathan Bluzer
 Sang Yeol Lee
 Moyses Kuchnir
 Thomas H. Zepf
 Robert Hoersch
 Hugo Safar
 Allen M. Hermann
 Charles P. Poole, Jr.
 David Pines
 Valentín García-Vázquez
 Ben de Mayo
 Fred Van Keuls
 A. P. Litvinchuk
 Janis Research Company, Inc. (William R. Shields)
 Claymore Engineering (Denison W. York)
 Institut de Radio Astronomie Millimetrique (C. Morris)
 MM Cables (Miles Apperley)
 Proteus Systems, Inc. (Richard Saam)
 Korea Atomic Energy Research Institute
 (Chan-Joong Kim)

John Gannon
 Joseph F. Wenckus
 Tomoko Goto
 Barry Friedman
 Uday Sinha
 V. Z. Kresin
 Robert Fisher
 Adriana Moreo
 Louis A. Schwartzkopf
 Ivan K. Schuller
 K. E. Gray
 Terry Aselage
 Jayaram Betanabhatla
 Huey-Chuen I. Kao
 Y. Takahashi
 Nazarali Merchant
 S. K. Remillard
 Stanton H. Cushner
 Simon Foner
 Akihiko Nishida
 Peter Lindenfeld
 Norio Kobayashi
 Paulo Pureur
 Josef Ashkenazi
 John Dash
 Steve Pierson
 P. H. Kes
 Detlef Brinkmann
 Yasukuni Matsumoto
 T. Ishida
 Ernst Helmut Brandt
 Robert Hammond
 T. P. Orlando
 Richard Klemm
 Yoji Koike
 A. Vera
 Marcel A.R. LeBlanc
 Henry Makowitz
 Ali Gencer
 Michel Laguës
 L. A. Openov
 Kenneth Rose
 Fred M. Mueller
 Anil K. Bhatnagar
 Miguel A. Alario-Franco
 Masatoshi Mori

The Norton Group (Marshall University)
 U. of Birmingham (Colin E. Gough)
 Superconductive Components Inc. (J. R. Gaines, Jr.)
 ETH Zürich (Albert Furrer)
 Superconductor Week (Aaron Bitterman)
 McGill University (Louis Taillefer)
 J. A. Spieckerman (Marketch Int.)
 NKT Research Center A/S (Torsten Freltoft)
 Schneider Electric (Jean-Marc Barbut)
 Hofstra University (Mark Edwards)
 Center for Mater. Res. and Anal., U. of Nebraska
 (D. J. Sellmyer)
 GateWave Northern, Inc. (Gert K. G. Hohenwarter)
 Univ. of New South Wales (G. J. Russell)
 James Cook Univ. (Janina Mazierska)
 U. of Manchester Inst. of Science and Technology
 (W.R. Flavell)
 Harvard University (David R. Nelson)
 Risø National Lab. (Per-Anker Lindgard)
 Columbia University (Q. Y. Ma)

Supporting (\$200-\$499)

Inst. for Supercond. and Electronics Mater.,
 U. of Wollongong (S. X. Dou)
 Centre d'Etudes de Saclay (Lelia Schmirgeld-Mignot)
 Asea Brown Boveri AG (Makan Chen)
 Max-Planck Institut für Festkörperforschung
 (Manuel Cardona)
 National Institute of Standards & Technology
 (A. F. Clark)
 F. de la Cruz
 U. Wisconsin Appl. Supercond. Research Center
 (David Larbalestier)
 Intermagnetics General Corp. (Carl H. Rosner)

Sustaining (\$500-\$999)

American Superconductor Corp. (A. P. Malozemoff)
 Nordic Superconductor Technologies A/S (Juan Farré)

Patron (\$1000-\$4999)

ISTECS/SRL
 Pirelli Cavi Spa (Laura Gherardi)
 Superconductive Components, Inc. (J. R. Gaines, Jr.)
 Office of Naval Research (ONR)

Benefactor (\$5000-\$14,999)

NIST

Sponsor (\$15,000—)

(Also see front page masthead)
 Department of Energy (DMS/BES/DOE)
 Advanced Research Project Agency (ARPA)
 National Science Foundation (NSF)



AMES LABORATORY

ADDRESS CORRECTION REQUESTED

Dr. Sreeparna Mitra
A219 Physics
Ames Laboratory
Iowa State University
Ames, Iowa 50011-3020

**1ST
CLASS**

High-T_c Update is published for the Office of Basic Energy Sciences, U.S. Department of Energy, under Contract W-7405-eng-82 with the Ames Laboratory, Iowa State University. Support is also provided by organizations listed on the masthead and by other donors. Please direct all inquiries to:

Dr. Sreeparna Mitra
A219 Physics
Ames Laboratory
Iowa State University
Ames, Iowa 50011-3020
Telephone: (515) 294-3877
Telefax: (515) 294-1134
E-mail: MITRA@AMESLAB.GOV
MITRA@IASTATE.EDU

Project Director and Editor: Sreeparna Mitra
Science Editor: John R. Clem
ISSN 1048-1141
Homepage: <http://www.iitap.iastate.edu/htcu/htcu.html>

High-T_c Update is the high-T_c superconductivity information exchange newsletter. It is available twice-monthly as hard copy and as electronic mail. Please send: 1) preprints, reprints, and other T_c-related reports or publications; 2) descriptions of on-going work; 3) meeting news; and 4) etc. Information in *High-T_c Update* is intended for limited distribution. Readers are expected to respect the rights of authors.