GEORGE W. CRABTREE
Materials Science Division
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PROFESSIONAL EXPERIENCE:

2001-present	Director, Materials Science Division Argonne National Laboratory
1989-2003	Professor, (25%) Department of Physics Northern Illinois University, DeKalb, IL
1986	Research Scientist, CRTBT/CNRS and Visiting Professor, Department of Physics, University of Grenoble, France
1985-present	Senior Physicist, Materials Science Division Argonne National Laboratory

EDUCATION:

Ph.D	Condensed Matter Physics, University of Illinois at Chicago
M.S	Solid State Physics, University of Washinton, Seattle
B.S.	Science Engineering, Northwestern University, Evanston IL

SELECTED AWARDS:

Kamerlingh Onnes Prize, 2003, "for pioneering and seminal experiments which elucidated the vortex phase diagram in high temperature superconductors under various conditions of disorder and anisotropy."
University of Chicago Award for Distinguished Performance at Argonne National Laboratory, 1998 and 1982.
U.S. Department of Energy Awards for Outstanding Scientific Accomplishment in Solid State Physics, 1997, 1995, 1985, and 1982.
R&D 100 Award, "Magnetic Flux Imaging System," 1996
Fellow, American Physical Society, 1983
ISI Highly Cited Researcher in Physics since 2001

SELECTED PROFESSIONAL ACTIVITIES:

Congressional Witness, *Fueling The Future: On The Road To The Hydrogen Economy*, Hearing of the House Science Committee, Subcommittees on Energy and Research, July 20, 2005
Co-Chair and Report Editor, *Workshop on Basic Research Needs for Solar Energy Utilization*, April 2005 (with Nathan S. Lewis (Caltech))
Associate Chair and Report Co-Editor, *Workshop on Basic Research Needs for the Hydrogen Economy*, May 2003 (Millie Dresselhaus (Chair) and Michelle Buchanan (Associate Chair))
Editor, Physica C, 1987- 2003.
Editor, Special Review Issue *Superconductivity in MgB_2: Electrons, Phonons, and Vortices*, Physica C **385**, 1-305 (2003).
Divisional Associate Editor, Physical Review Letters, 1998 - 2001.

Chair, Executive Committee of Division of Condensed Matter Physics, APS, 2001-2002.
Review Panel, United Kingdom Theme Day on Superconductivity, June 16-18, 2001.
Co-Editor, Proceedings of the International Symposium on Frontiers of High Tc Superconductivity, Morioka, Japan, Physica C **263**, 1-576, 1996.
Gordon Research Conference on Superconductivity: Vice-Chairman, 1991; Chairman, 1992.
Chairman, External Advisory Committee for the National High Field Magnet Laboratory, Florida State University, Tallahassee, FL, 1998-2000; Member 1991- present.

RESEARCH INTERSTS:
- Materials science
- Nanoscale superconductors and magnets
- Vortex matter in superconductors
- Correlated electrons in metals
- Novel routes for energy conversion

SELECTED INVITED TALKS (of ~90):

Superconducting Vortices: Lattice, Liquid, and Plastic Motion
Plenary Session of the National Conference on Solid State Physics
Madrid, Spain, February 5-8, 2001

Vortices in Dense Self-Assembled Hole Arrays
Third International Workshop on Magnetism and Superconductivity of Advanced Materials, Ladek Zdroj, Poland, July 14-19, 2002

Perspectives in Superconductivity: electron-phonon interaction, multiple gaps, and vortices
Symposium on Future Oriented Interdisciplinary Materials Science 2003
Tsukuba, Japan, February 28-March 1, 2003

Vortices in Self-Assembled Dense Hole Arrays
G. W. Crabtree
Kamerling Onnes Prize Lecture
7th International Conference on the Materials and Mechanisms of Superconductivity-High Temperature Superconductors
Rio de Janeiro, Brazil, May 26, 2003

Pinning the Vortex Liquid
G. W. Crabtree, W. K. Kwok, R. Olsson, G. Karapetrov, and Lisa Paulius
17th International Symposium on Superconductivity Niigata, Japan, November 23-25, 2004

Mesoscopic Superconductivity
G. W. Crabtree
Conference on Single Molecule Magnets and Hybrid Magnetic Nanostructures
International Center for Theoretical Physics, Trieste, Italy, June 27- July 1, 2005

REECENT PUBLICATIONS (of ~400 in print):

Critical Points in Heavy Ion Irradiated Untwinned YBa2Cu3O7 Crystals
W. K. Kwok, R. J. Olsson, G. Karapetrov, L. M. Paulius, W. G. Moulton, D. J. Hofman, and G. W. Crabtree
Phys. Rev. Lett. **84**, 3706 (2000)

Experimental Evidence for the Vortex Glass Phase in Untwinned, Proton Irradiated YBa2Cu3O7
A. M. Petrean and L. M. Paulius, W.-K. Kwok, J. A. Fendrich, and G. W. Crabtree
Phys. Rev. Lett. **84**, 5852 (2000)

Effects of successive proton irradiation on the peak effect in YBa2Cu3O7– single crystals
V. Tobos, L. M. Paulius, A. M. Petrean, and S. Ferguson, J. W. Snyder, R. J. Olsson, W.-K. Kwok, and G. W. Crabtree
Appl. Phys. Lett. **78**, 3097 (2001)

Scanning Tunneling Spectroscopy in MgB2
G. Karapetrov, M. Iavarone, W. K. Kwok, G. W. Crabtree, and D. G. Hinks
Phys. Rev. Lett. **86**, 4374 (2001)

An unusual phase transition to a second liquid vortex phase in the superconductor YBa2Cu3O7
F. Bouquet, C. Marcenat, E. Steep, R. Calemczuk, W. K. Kwok, U. Welp, G. W. Crabtree, R. A. Fisher, N. E. Phillips, and A. Schilling
Nature **411**, 448 (2001)

Two-Band Superconductivity in MgB2
M. Iavarone, G. Karapetrov, A. E. Koshelev, W. K. Kwok, G. W. Crabtree, D. G. Hinks, W. N. Kang, Eun-Mi Choi, Hyun Jung Kim, Hyeong-Jin Kim, and S. I. Lee
Phys. Rev. Lett. **89**, 187002 (2002)

Magnesium Diboride: Better Late than Never
Paul C. Canfield and George W. Crabtree
Physics Today **56**(3), 34-40 (2003)

Superconducting transition and phase diagram of single-crystal MgB_2
U. Welp, A. Rydh, G. Karapetrov, W. K. Kwok, G. W. Crabtree, Ch. Marcenat L. Paulius, T. Klein, J. Marcus, K. H. P. Kim, C. U. Jung, H.-S. Lee, B. Kang, and S.-I. Lee
Phys. Rev. B **67**, 012505 (2003)

Experimental test of the self-organized criticality of vortices in superconductors
V. K. Vlasko-Vlasov, U. Welp, V. Metlushko, and G. W. Crabtree
Phys. Rev. B **69**, 140504 (2004)

The Hydrogen Economy
G. W. Crabtree, M. S. Dresselhaus, M. V. Buchanan
Physics Today **57**(12), 39 (2004)

Tuning the architecture of mesostructures by electrodeposition
Z.L. Xiao, C.Y. Han, W.K. Kwok, H.W. Wang, U. Welp, J. Wang, G.W. Crabtree
J. Am. Chem. Soc. **126**, 2316 (2004)

Nanowires and nanoribbons of charge-density-wave conductor NbSe3
Y.S. Hor, Z.L. Xiao, U. Welp, Y. Ito, J.F. Mitchell, R.W. Cook, W.K. Kwok, and G.W. Crabtree
Nano Letters **5**, 397 (2005)