

Carlo Uberto Segre

Duchossois Leadership Professor, Physics Department
Director, Center for Synchrotron Radiation Research and Instrumentation
Illinois Institute of Technology
3101 S. Dearborn
Chicago, IL 60616
Tel: 312.567.3498
FAX: 312.567.3494
Citizenship: U.S.A.

Education

1981 Ph.D., Physics, University of California, San Diego
1977 M.S., Physics, University of California, San Diego
1976 B.S. *cum laude*, Physics, University of Illinois, Urbana-Champaign
B.S. *cum laude*, Chemistry, University of Illinois, Urbana-Champaign

Appointments

2012- Director, Center for Synchrotron Radiation Research and Instrumentation, Illinois Institute of Technology
2012- Deputy Director, Biophysics Collaborative Access Team
2011- Duchossois Leadership Professor, Illinois Institute of Technology
2009-2012 Associate Dean for Graduate Admissions, Graduate College, Illinois Institute of Technology
2003-2009 Associate Dean for Special Projects, Graduate College, Illinois Institute of Technology
2001- Professor of Physics, Illinois Institute of Technology
1994- Deputy Director, Materials Research Collaborative Access Team (MRCAT)
2002-2003 Associate Dean for Research, Armour College of Engineering and Science, Illinois Institute of Technology
1995-1999 Associate Chair, Department of Biological, Chemical and Physical Sciences, Illinois Institute of Technology
1993-1995 Executive Chair for Chemistry, Department of Chemical and Biological Sciences, Illinois Institute of Technology
1993-1995 Joint Appointment as Associate Professor of Chemistry, Illinois Institute of Technology
1988-2001 Associate Professor of Physics, Illinois Institute of Technology
1990-1993 Staff Associate, International Centre for Science and High Technology, Trieste, Italy
1989-1990 Visiting Senior Scientist, International Centre for Theoretical Physics, Trieste, Italy

1983-1988 Assistant Professor of Physics, Illinois Institute of Technology

1981-1983 Postdoctoral Research Fellow, Department of Physics, Rutgers, the State University of New Jersey
Advisor: M.C. Croft

Awards and Recognition

- Fellow, American Association for the Advancement of Science (2013)
- Fellow of the International Centre for Diffraction Data (2006)
- IIT Sigma Xi Research Award, Senior Faculty Division (2014)
- IIT Faculty Research Fellowship 1985-1986
- Lewis College Junior Faculty Teaching Award 1985-1986
- NATO Postdoctoral Fellowship, 1983 (declined)
- Lyman Award, Department of Physics, University of Illinois, Urbana 1976
- Phi Beta Kappa
- Phi Kappa Phi

Society Memberships & Service

- American Physical Society
- American Association for the Advancement of Science
- American Chemical Society
- International X-ray Absorption Society
- Sigma Xi - President IIT Chapter (2005-)
- International Center for Diffraction Data - Chair Education Subcommittee (2005-)
- Member of the Advanced Photon Source Beamtime Allocation Committee (2007-)
- Debian GNU/Linux Developer (2005-)
- Proposal reviewer for NSF, DOE, NIH and CRDF
- Reviewer for *Physical Review*, *Journal of Crystal Growth & Design*, *ACS Nano*, and *Nanoscience & Nanotechnology Letters*

Teaching and Outreach Activities

Over the course of my career at IIT, I have had the opportunity to teach undergraduate courses at all levels and graduate courses specific to my research expertise. These include, Introduction to the Professions, General Physics I, II & III, Computational Physics, Instrumentation Laboratory, Solid State Physics, Modern Optics, Fundamentals of Quantum Theory I & II, Physical Chemistry I & III, Electronics for Analytical Chemists (graduate), Introduction to Synchrotron Radiation (graduate, also offered over Internet to students outside the United States). I have also been involved in several revisions of the physics curriculum to meet the needs of our majors and engineering students who take our general physics courses.

I have also been an instructor for the APS/IIT EXAFS Summer School since 2009 and I have twice been invited to be an instructor for the NSLS EXAFS Workshop (2006 & 2010). I annually offer an informal short course for IIT graduate students on EXAFS Theory and practice and I have offered the same short course to researchers at the Indian Institute of Science (Bangalore, India) and Wright Patterson Air Force Base (Dayton, Ohio).

I have served as academic advisor to several hundred undergraduate students, including physics majors (undergraduates as well as professional Masters and first year M.S. and Ph.D. students), and undecided students in their first 2 years. More recently, I have become a mentor for the Duchossois Leadership Scholars program. This includes not only advising current scholars but also recruiting new scholars for the program.

Over my time at IIT, I have been able to successfully establish a number of new degree programs, including Professional Masters programs in Radiation Health Physics, where I served as co-Director and Interim Director at various times; Bachelor of Science programs in Physics Education and Applied Physics; and a Master of Science program in Applied Physics.

Outside the classroom, I have been faculty advisor to the Society of Physics Students, the IIT students responsible for the Chicago Area Undergraduate Research Symposium and the IIT Undergraduate Research Journal. For the past 20 years I have been webmaster, chair, and member of the International Bridge Building Committee, a competition for high school students.

In my role as a Debian GNU/Linux Developer, I have packaged scientific software for the Debian Linux and Ubuntu operating systems. Making these programs for scientific data analysis freely available to the broader scientific community.

Administrative Accomplishments

I have served as Associate Chair of the combined Biological, Chemical and Physical Sciences Department (6 years) and as Associate Dean for nearly 12 years in various positions. My major accomplishment as Associate Dean for Special Projects was the development of a framework and agreement for IIT/FermiLab joint faculty appointments at the Assistant Professor level. These were novel appointment agreements at the time but have proven to be successful and now are used as templates for joint positions with Argonne National Laboratory.

As Associate Dean for Graduate Admissions, I reorganized the Graduate Admissions Office and spearheaded the development of a fully electronic graduate application, evaluation, admission, and award system which integrates with the Banner academic computing system used by IIT and which is as advanced as any in the country.

In addition to developing and recruiting for the Duchossois Leadership Scholars program, I have also put together a framework for the Tang Fellowship program which recruits outstanding Chinese students and fully supports their Ph.D. studies at IIT.

Research Activities

I have been working in the field of materials science for over 30 years and have gained a broad experience in the preparation and characterization of bulk and thin film samples of complex superconducting, magnetic and mixed

valence materials. My expertise spans the experimental techniques of x-ray diffraction, neutron diffraction and x-ray absorption spectroscopy as well as the structural analysis tools of total pattern fitting and Rietveld refinement of structural data. I also have experience in electron microscopy, resistivity, magnetic and Mössbauer effect measurements. There are three patent disclosures related to materials I have studied.

Beginning in 1989, I have devoted more of my effort to building IIT's presence in the Synchrotron Radiation community. These activities have resulted in a shift in my scientific interests which is now beginning to be reflected in my publication record.

- I am a founding member of IIT's Center for Synchrotron Radiation Research and Instrumentation (CSRRI);
- I have been on the Local Organizing Committee of the 1st *International Conference on Synchrotron Radiation in Materials Science* (1996); the 10th *International Conference on X-ray Absorption Fine Structure* (1998); and the 5th *International Conference on Synchrotron Radiation in Materials Science* (2006).
- Since 1994, I have served as the IIT representative to the MRCAT Executive Committee, as Deputy Director of MRCAT and as supervisor to all of the MRCAT staff.

One of my principal areas of interest has been sample preparation of bulk materials, from arc-melting of ternary silicide superconducting and magnetic compounds to the sintering of ceramic superconductors and ferroelectrics. This includes the determination of the optimal synthesis conditions and both ternary and solid solution phase diagram determination. This extended to thin film growth, particularly the determination of ideal growth conditions for highly oriented films of superconducting ceramic materials by pulsed laser deposition and the novel technique of electron spark deposition. An integral part of understanding the conditions for optimal synthesis is the structural characterization of the material. I have worked extensively on the solving of the crystallographic structure of complex oxides by powder neutron and x-ray diffraction using the technique of Rietveld refinement. I was involved in some of the original structural determinations of the high temperature superconducting compound $\text{YBa}_2\text{Cu}_3\text{O}_7$ and related materials.

More recently, I have been using synchrotron-related structural techniques such as X-ray Absorption Fine Structure (XAFS) and anomalous diffraction to get a better understanding of the local and medium range disorder which is usually an integral part of any ceramic superconductor or ferroelectric solid solution system. These techniques are also being applied to the structural characterization of thin films. My ultimate goal is to develop new ways of combining traditional average structural refinement with local structural probes such as XAFS in order to develop more accurate structural models for disordered systems.

I have been heavily involved in developing instrumentation for use at synchrotron radiation facilities, including the MRCAT beamline, a bent Laue analyzer for fluorescence XAFS, a beam cleaner for harmonic rejection, and *in-situ* and *operando* electrochemical cells for the study of catalysis, fuel cells and batteries.

My current research projects include *in situ* XAFS on solid state and flow batteries and working fuel cells, phosphors, dilute magnetic semiconductors, and multiferroics. I have also been applying high energy x-ray diffraction and tomography to study cultural heritage artifacts. A recent ARPA-e award has taken my research in the direction of developing a new format of battery, combining the advantages of solid state and flow batteries, for electric vehicles.

Recent Invited Presentations

- 2004 "Structural studies of nanoparticle catalysts in a fully operating Direct Methanol Fuel Cell", Illinois State University, Physics Department.
- 2006 "Structural studies of nanoparticle catalysts in a fully operating Direct Methanol Fuel Cell", University of North Dakota, Physics Department

- “Structural studies of nanoparticle catalysts in a fully operating Direct Methanol Fuel Cell”, University of Iowa, Physics Department
- “X-ray absorption spectroscopy as in-situ characterization of catalysts in operating fuel cells”, XV International Materials Research Congress, Cancun, Mexico.
- “Fuel cell catalyst structural characterization by in-situ x-ray absorption spectroscopy”, American Chemical Society Meeting, San Francisco.
- “In-situ XAFS studies of fuel cell catalysts”, NSLS Workshop on XAFS studies of nanoparticles and chemical transformations.
- 2007 “In-situ Spectroscopic Studies of Pb Corrosion”, GNEP Advanced Materials Workshop, Oak Ridge National Laboratory.
- 2009 “Using x-ray absorption spectroscopy to probe the local structure of nano-scale systems”, Nanotechnology Colloquium, NanoMaterials Application Center, Texas State University.
- “Removal of oxygen adsorbates on Pt/C and PtNi(1:1)/C alloy nanoparticle catalysts for the oxygen reduction reaction in PEMFCs”, XAFS 14 Conference, Camerino, Italy.
- 2010 “Using experimental and computational x-ray absorption spectroscopy to understand fuel cell catalysts”, University of Delaware, Physics Department
- “Using experimental and computational x-ray absorption spectroscopy to understand fuel cell catalysts”, Daresbury Laboratory, UK.
- 2011 “X-ray Absorption Spectroscopy and applications to fuel cell catalysts”, Wichita State University, Physics Department.
- “X-rays in the Neighborhood: IIT and the Advanced Photon Source”, Illinois Institute of Technology University Lecture.
- 2012 “Using x-ray physics to study catalysis at the MRCAT Beam Line”, University of Illinois, Urbana-Champaign, Physics Department.
- “Using x-ray physics to study catalysis at the MRCAT Beam Line”, Wright-Patterson Air Force Base.
- 2013 “Using x-ray physics to study catalysis at the MRCAT Beam Line”, Università di Padova, Italy, Chemical Engineering Department.
- “Using x-ray physics to study catalysis at the MRCAT Beam Line”, Università di Trento, Italy, Chemical Engineering Department.
- “Surface science using x-ray and neutron sources”, BP Distributed Research Laboratory meeting on surface science, BP Naperville.
- “In situ and operando XAFS studies of fuel cell catalysts”, BP Distributed Research Laboratory meeting on surface science, BP Naperville.
- “In situ and operando XAFS studies of fuel cell catalysts”, Illinois Institute of Technology, Chemistry Department Colloquium.
- 2014 “Using synchrotron radiation to study catalysis”, Villanova University, Chemistry Department Colloquium.
- “Can EXAFS help solve local structural questions in NPD and XRPD?”, International center for Diffraction Data, March 2014 Meeting.

“The challenges of making flow batteries with nanoelectrofuel”, Wichita State University, Physics Department Colloquium.

“Making an nanoelectrofuel flow battery”, Illinois Institute of Technology, Mechanical, Materials and Aerospace Engineering Department Colloquium.

Graduate Students Supervised

Ph.D.

- 1987 K. Zhang - *Structure and Superconductivity of High Transition Temperature Copper Oxides.*
- 1991 K.J. Akujieze - *Structural and Electronic Studies of Pure and Lead-Doped Phases of the Single Cu-O layer Bi-Sr-Cu-O System.*
- 1991 D.T. Marx - *Structures and Superconductivity in Perovskite Bismuthate Systems.*
- 1992 P.G. Radaelli - *Oxygen Ordering and Superconductivity in Pure and Calcium-Substituted REBa₂Cu₃O_{6+x} Systems.*
- 1994 Z. Wang - *Flux Dynamics in Type-II Superconductors.*
- 1995 R.K. Zasadzinski - *Studies of Superconductors Using a Low-Temperature Scanning Tunneling Microscope.*
- 1996 B. Ma - *Electrical Transport Properties and Defect Structure in the Sr-Fe-Co-O System.*
- 1999 A. Cansiz - *Force, Stiffness and Hysteresis Losses in High Temperature Superconducting Bearings.*
- 2003 N.E. Leyarovska - *X-ray Spectroscopy of Manganese-Based Single-Molecule Magnets.*
- 2007 S. Stoupin - *Manganese Incorporation into Ferroelectric Lead Titanate.*
- 2009 S. Liu - *X-ray Absorption Studies of Materials for Advanced Nuclear Reactors.*
- 2009 T. Brennan - *On the Variation of Sonoluminescence Flash Timing.*
- 2010 Q. Jia - *In situ XAFS Studies of the Oxygen Reduction Reaction on Carbon Supported Platinum and Platinum Nickel Nano-Scale Alloys as Cathode Catalysts in Fuel Cells.*
- 2012 H. Ganegoda - *Iron Incorporation into Ferroelectric Lead Titanate*
- 2013 M. Wojcik - *Fabrication and Characterization of High Aspect Ratio Hard X-ray Zone Plates with Ultrananocrystalline Diamond Molds*

M.S.

- 1989 M.S. Kleefisch - *The Thermal Decomposition of an Alternative Precursor to YBa₂Cu₃O₇.*
- 1997 T. Bolin - *The Dielectric Constant and Stability of Nafion-Ceramic Composite Thin Films.*
- 2010 L. Melo - *X-Ray Diffraction and Fluorescence Analysis of Ancient Axe Heads.*

Publications

Refereed Publications

1. “Bound-state wave packets”, C.U. Segre and J.D. Sullivan, *Am. J. Phys.* **44**, 729 (1976).
2. “Pressure enhanced superconductive and magnetic interactions in the system $(\text{Er}_{1-x}\text{Ho}_x)\text{Rh}_4\text{B}_4$ ”, R.N. Shelton, C.U. Segre and D.C. Johnston, *Solid State Commun.* **33**, 843 (1980).
3. “The superconductivity of $\text{Sc}_4\text{T}_5\text{Si}_{10}$ (T=Co,Rh,Ir) and isomorphous compounds”, H.F. Braun and C.U. Segre, *Solid State Commun.* **35**, 735 (1980).
4. “Properties of $\text{Y}_3\text{Ru}_4\text{Ge}_{13}$ and isotypic compounds”, C.U. Segre, H.F. Braun and K. Yvon, in *Ternary Superconductors*, eds. G.K. Shenoy, B.D. Dunlap and F.Y. Fradin, (Elsevier, New York, 1981), p.243.
5. “Ternary superconductors of the $\text{Sc}_5\text{Co}_4\text{Si}_{10}$ type”, H.F. Braun and C.U. Segre, in *Ternary Superconductors*, eds. G.K. Shenoy, B.D. Dunlap and F.Y. Fradin, (Elsevier, New York, 1981), p.239.
6. “Effect of pressure on the superconducting and magnetic critical temperatures of bct ternary ruthenium borides”, R.N. Shelton, C.U. Segre and D.C. Johnston, in *Ternary Superconductors*, eds. G.K. Shenoy, B.D. Dunlap and F.Y. Fradin, (Elsevier, New York, 1981), p.205.
7. “Hydrostatic pressure effects on the superconducting properties of $\text{Ag}_{1-x}\text{Sn}_{1+x}\text{Se}_2$ ”, R.N. Shelton, C.U. Segre and D.C. Johnston, *Solid State Commun.* **39**, 797-800 (1981).
8. “Reentrant superconductivity in $\text{Tm}_2\text{Fe}_3\text{Si}_5$ ”, C.U. Segre and H.F. Braun, *Physics Letters* **85A**, 372-374 (1981).
9. “Nonlinear pressure effects in superconducting rare earth-iron-silicides”, C.U. Segre and H.F. Braun in *Physics of Solids Under High Pressure*, eds. J.S. Schilling and R.N. Shelton, (North-Holland, Amsterdam, 1981), p.381.
10. “Susceptibility and Mössbauer studies of magnetic rare earth-iron-silicides”, H.F. Braun, C.U. Segre, F. Acker, M. Rosenberg, S. Dey and P. Deppe, *J. Magn. Magn. Mat.* **25**, 117-123 (1981).
11. “The phase diagram for a Eu compound undergoing configurational crossover: Mössbauer effect measurements”, M.C. Croft, C.U. Segre, J.A. Hodges, A. Krishnan, V. Murgai, L.C. Gupta and R.D. Parks in *Valence Instabilities*, eds. P. Wachter and H. Boppert, (North-Holland, Amsterdam, 1982), p.121.
12. “Configurational crossover for Eu systems: a simple model”, M. Croft, E. Kemly and C.U. Segre, *Solid State Commun.* **44**, 1025-1029 (1982).
13. “Valence instability in $\text{Eu}(\text{Pd}_{1-x}\text{Au}_x)_2\text{Si}_2$: the global phase diagram”, C.U. Segre, M. Croft, J.A. Hodges, V. Murgai, L.C. Gupta and R.D. Parks, *Phys. Rev. Lett.* **49**, 1947-1950 (1982).
14. “Neutron-diffraction study of magnetically ordered $\text{Er}_2\text{Fe}_3\text{Si}_5$ ”, A.R. Moodenbaugh, D.E. Cox, C.B. Vining and C.U. Segre, *Phys. Rev. B* **29**, 271-277 (1984).
15. “Ce valence variation in intermetallic alloys: L_{III} absorption spectroscopy results”, R.A. Neifeld, M.C. Croft, C.U. Segre and S. Raaen, *Phys. Rev. B* **30**, 4164-4169 (1984).
16. “Mössbauer effect and L_{III} absorption measurements on EuPd_2Si_2 and other Eu compounds”, E. Kemly, M. Croft, C.U. Segre, V. Murgai, L.C. Gupta, C. Godart and R.D. Parks, proceedings of the International Conference on Valence Fluctuations, *J. Magn. Magn. Mat.* **47** 403-406(1985).

17. "Specific heat and critical field for some iron containing superconductors", G.R. Stewart, G.P. Meisner and C.U. Segre, *J. Low Temp. Phys.* **59**, 237-240 (1985).
18. "Chemical environment and Ce valence: global trends in transition-metal compounds", R.A. Neifeld, M.C. Croft, B. Qi, J.B. Zhou, I. Perez, H. Jhans, T. Mihalisin, C.U. Segre, M. Madigan, M.S. Torikachvili, M.B. Maple and L.E. DeLong, *Phys. Rev. B* **32**, 6928-6931 (1985).
19. "Sputtered thin films of Er₂Fe₁₄B permanent magnets", C.U. Segre, J.F. Zasadzinski and E.D. Rippert in *Ternary and Multinary Compounds*, eds. S.K. Deb, A. Zunger (MRS, Pittsburgh 1987), p.491.
20. "Magnetic properties of Er₂Fe₁₄B and Nd₂Fe₁₄B thin films", J.F. Zasadzinski, C.U. Segre and E.D. Rippert, *J. Appl. Phys.* **61**, 4278-4280 (1987).
21. "Thin film fabrication of R₂Fe₁₄B compounds", J.F. Zasadzinski, C.U. Segre, E.D. Rippert, J. Chrzas and P. Radusewicz in *Permanent Magnet Materials*, (MRS, Pittsburgh 1987).
22. "Phase diagram and superconductivity in the Y-Ba-Cu-O system", D.G. Hinks, L. Soderholm, D.W. Capone II, J.D. Jorgensen, I.K. Schuller, C.U. Segre, K. Zhang and J.D. Grace, *Appl. Phys. Lett.* **50**, 1688-1690 (1987).
23. "La_{2-x}Sr_xCu₄ and YBa₂Cu₃O_{6.5}: new high T_C superconducting oxides", L. Soderholm, D.W. Capone II, D.G. Hinks, J.D. Jorgensen, I.K. Schuller, J. Grace, K. Zhang and C.U. Segre, *Inorg. Chim. Acta* **140**, 167-168 (1987).
24. "Structure of the single phase high temperature superconductor YBa₂Cu₃O₇", M.A. Beno, L. Soderholm, D.W. Capone II, D.G. Hinks, J.D. Jorgensen, J.D. Grace, I.K. Schuller, C.U. Segre and K. Zhang, *Appl. Phys. Lett.* **51**, 57-59 (1987).
25. "Structure and crystal chemistry of the high T_C superconductor YBa₂Cu₃O_{7-δ}", W.I.F. David, W.T.A. Harrison, J.M.F. Gunn, O. Moze, A.K. Soper, P. Day, J.D. Jorgensen, M.A. Beno, D.W. Capone II, D.G. Hinks, I.K. Schuller, L. Soderholm, C.U. Segre, K. Zhang and J.D. Grace, *Nature* **327**, 310-312 (1987).
26. "Structural phase transition in YBa₂Cu₃O_{7-δ}: the role of dimensionality in high temperature superconductivity", I.K. Schuller, D.G. Hinks, M.A. Beno, D.W. Capone II, L. Soderholm, J.-P. Locquet, Y. Bruynseraede, C.U. Segre and K. Zhang, *Solid State Commun.* **63**, 385-388 (1987).
27. "Copper oxidation states, vacancy ordering and their effect on high temperature superconductivity", I.K. Schuller, D.G. Hinks, J.D. Jorgensen, L. Soderholm, M. Beno, K. Zhang, C.U. Segre, Y. Bruynseraede and J.-P. Locquet in *Novel Superconductivity* ed. S.A. Wolf and V.Z. Kresin, (Plenum, NY, 1987), p. 647.
28. "Oxygen ordering and the orthorhombic-to-tetragonal phase transition in YBa₂Cu₃O_{7-δ}", J.D. Jorgensen, M.A. Beno, D.G. Hinks, L. Soderholm, K. Volin, R.L. Hitterman, J.D. Grace, I.K. Schuller, C.U. Segre, K. Zhang and M.S. Kleefisch, *Phys. Rev. B* **36**, 3608-3616 (1987).
29. "Incorporation of Pr in YBa₂Cu₃O_{7-δ}: electronic effects on superconductivity", L. Soderholm, K. Zhang, D.G. Hinks, M.A. Beno, J.D. Jorgensen, C.U. Segre and I.K. Schuller, *Nature* **328**, 604 (1987).
30. "Electronic and magnetic properties of rare-earth ions in REBa₂Cu₃O_{7-δ} (RE=Dy, Ho, Er)", B.D. Dunlap, M. Slaski, D.G. Hinks, L. Soderholm, M. Beno, K. Zhang, C.U. Segre, G.W. Crabtree, W.K. Kwok, S.K. Malik, I.K. Schuller, J.D. Jorgensen and Z. Sungaila, *J. Magn. Magn. Mat.* **68**, L139-L144 (1987).
31. "Structural relationships in high temperature superconductors", I.K. Schuller, C.U. Segre, D.G. Hinks, J.D. Jorgensen, L. Soderholm, M. Beno and K. Zhang, *Series on Progress in High Temperature Superconductivity, Vol. I: Proceedings of the Adriatico Research Conference on High Temperature Superconductors* (1987).

32. “New superconducting phases in the Y-Os-Si system”, L. Schellenberg, H.F. Braun, C.U. Segre, M. Gueramian and J.Muller, *Jap. J. Appl. Phys.* **26**, 963-964 (1987).
33. “Oxygen ordering and superconductivity in $\text{La}(\text{Ba}_{2-x}\text{La}_x)\text{Cu}_3\text{O}_{7+\delta}$ ”, C.U. Segre, B. Dabrowski, D.G. Hinks, K. Zhang, J.D. Jorgensen, M.A. Beno and I.K. Schuller, *Nature* **329**, 227-229 (1987).
34. “Solubility and superconductivity in the $\text{RE}(\text{Ba}_{2-x}\text{RE}_x)\text{Cu}_3\text{O}_{7+\delta}$ systems with $\text{RE}=\text{Nd,Sm,Eu,Gd,Dy}$ and Y”, K. Zhang, C.U. Segre, B. Dabrowski, D.G. Hinks, I.K. Schuller, J.D. Jorgensen and M. Slaski, *J. Phys. C* **20**, L935-L940 (1987).
35. “X-Ray diffraction and Mössbauer effect measurements near a valence transition”, H. Jahns, M. Croft, E. Kemly, B. Grier and C.U. Segre in *Theoretical and Experimental Aspects of Valence Fluctuations*, Proc. of 5th International Conf. on Valence Fluctuations, Bangalore, India 5-9 Jan. 1987, p655 (New York, NY, USA: Plenum 1987).
36. “Magnetic ordering of Gd and Cu in superconducting and non-superconducting $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$ ”, B.D. Dunlap, M. Slaski, D.G. Hinks, K. Zhang, C.U. Segre, S.K. Malik and E.E. Alp, *Phys. Rev. B* **37**, 592-594 (1988).
37. “Is the isotope effect in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ absent?”, M. Grimsditch, T.O. Brun, R. Bhadra, B. Dabrowski, D.G. Hinks, J.D. Jorgensen, M.A. Beno, J.Z. Liu, H.B. Schuttler, C.U. Segre, L. Soderholm, B.W. Veal and I.K. Schuller, *Phys. Rev. Lett.* **60**, 752 (1988).
38. “Raman scattering from high T_C superconductors”, R. Bhadra, T.O. Brun, M.A. Beno, B. Dabrowski, D.G. Hinks, J.Z. Liu, J.D. Jorgensen, I.K. Schuller, C.U. Segre, L. Soderholm, B. Veal, J.M. Williams, K. Zhang and M. Grimsditch, *Phys. Rev. B* **37**, 5142-5147 (1988).
39. “Neutron diffraction studies of high T_C superconductors”, D.G. Hinks, B. Dabrowski, K. Zhang, C.U. Segre, J.D. Jorgensen, L. Soderholm and M. Beno, *Mat. Res. Soc. Symp. Proc.* **99**, 9 (1988).
40. “Oxygen order, stoichiometry and magnetic behavior in $\text{YBa}_2(\text{Cu}_{1-x}\text{Fe}_x)_3\text{O}_{7+\delta}$ ”, C.W. Kimball, J.L. Matykiewicz, J. Giapintzakis, H. Lee, B.D. Dunlap, M. Slaski, F.Y. Fradin, C.U. Segre and J.D. Jorgensen, *Mat. Res. Soc. Symp. Proc.* **99**, 107 (1988).
41. “ 1^{st} order valence transition in $\text{Eu}(\text{Pd}_{0.9}\text{Au}_{0.1})_2\text{Si}_2$: an x-ray diffraction study”, H. Jahns, M. Croft, E. Kemly, V. Murgai, B. Grier and C.U. Segre, *Solid State Commun.* **66**, 1027-1030 (1988).
42. “Superconductivity in silicon-rich RE-Os-Si compounds”, L. Schellenberg, H.F. Braun, C.U. Segre, M. Gueramian, B. Chabot, M. Decroux, D. Cattani and J. Muller, *Physica C* **153-155**, 485486 (1988).
43. “Structural and magnetic properties of Fe impurities in $\text{YBa}_2\text{Cu}_3\text{O}_{7+\delta}$ ”, B.D. Dunlap, J.D. Jorgensen, W.K. Kwok, C.W. Kimball, J.L. Matykiewicz, H. Lee, and C.U. Segre, *Physica C* **153-155**, 1100-1104 (1988).
44. “Local atomic structure of $\text{La}_{2-x}(\text{Sr,Ba})_x\text{CuO}_4$ determined by pulsed neutron scattering”, T. Egami, W. Dmowski, J.D. Jorgensen, D.G. Hinks, D.W. Capone, II, C.U. Segre and K. Zhang, *Proc. Drexel Intl. Conf. on High Temp. Superconductivity* (Singapore, World Scientific 1988) p101.
45. “Microstructural investigation of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ films deposited by laser ablation from $\text{BaF}_2/\text{Y}_2\text{O}_3/\text{CuO}$ targets”, R.L. Burton, C.U. Segre, H.O. Marcy and C.R. Kannewurf, in *Technology of Thin Film Superconductors*, (1989).
46. “Structural behavior and chemical order of Fe in $\text{YBa}_2(\text{Cu}_{1-x}\text{Fe}_x)_3\text{O}_{7+\delta}$ ”, B.D. Dunlap, J.D. Jorgensen, C.U. Segre, A.E. Dwight, J.L. Matykiewicz, H. Lee, W. Peng and C.W. Kimball, *Physica C* **158**, 397-405 (1989).

47. "Origin of enhanced growth of the 110 K superconducting phase by Pb doping in the Bi-Sr-Ca-Cu-O system", D. Shi, M.S. Boley, J.G. Shen, M. Xu, K. Vandervoort, Y.X. Liao, A. Zangvil, J. Akujieze, and C.U. Segre, *Appl. Phys. Lett.* **55**, 699-701 (1989).
48. "Cation substitution studies in the $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ structure", F.C. Maticotta, C.U. Segre, C. Infante, J. Ramos-Arhuís, B. Ma and P. Ganguly, *High Temperature Superconductivity: Proceedings of the 3rd National Meeting*, Genoa, Italy, February 1990, eds. C. Ferdeghini and A.S. Siri, p75 (World Scientific, Singapore 1990).
49. "Structural and superconducting properties of oxygen-deficient and doped $\text{YBa}_2\text{Cu}_3\text{O}_{7+\delta}$ ", J.D. Jorgensen, D.G. Hinks, H. Shaked, B. Dabrowski, B.W. Veal, A.P. Paulikas, L.J. Nowicki, G. Crabtree, W.K. Kwok, A. Umezawa, L.H. Nunez, B.D. Dunlap, C.U. Segre and C.W. Kimball, *Physica B* **156**, 877879 (1990).
50. "Deposition of YBCO films on SrTiO_3 by laser ablation", M. Bianconi, L. Corraera, R. Fabbri, A. Lamagna, S. Nicoletti, J. Ramos-Arhuís, F.C. Maticotta, C.U. Segre and J. Siejka, *High Temperature Superconductivity: Proceedings of the 3rd National Meeting*, Genoa, Italy, February 1990, eds. C. Ferdeghini and A.S. Siri, p409 (World Scientific, Singapore 1990).
51. "In-situ growth of Y-Ba-Cu-O films by laser deposition", G.G. Bentini, M. Bianconi, L. Corraera, R. Fabbri, A. Lamagna, S. Nicoletti, R. Nipoti, J. Ramos-Arhuís, F.C. Maticotta and C.U. Segre, *J. Less Common Metals* **164**, 315-320 (1990).
52. "High critical current density in grain-oriented bulk $\text{YBa}_2\text{Cu}_3\text{O}_x$ Processed by Partial Melt Growth", D. Shi, M.M. Fang, J. Akujieze, M. Xu, J.G. Chen and C.U. Segre, *Appl. Phys. Lett.* **57**, 2606-2608 (1990).
53. "Superconductivity in $(\text{Y}_{1-x}\text{Sr}_x)(\text{Ba}_{1.5}\text{Sr}_{0.5})\text{Cu}_3\text{O}_{7-\delta}$ compounds", F.C. Maticotta, T. Moyo, J. Ramos-Arhuís, C.U. Segre, S.A. Siddiqi and A. Migliori, *Bulletin of Materials Science* **14**, 279-285 (1991).
54. "Structure and superconductivity in the single Cu-O layered $(\text{Bi}_{2-x}\text{Pb}_x)(\text{Sr}_{2-y}\text{La}_y)\text{CuO}_{6+\delta}$ system", K. Zhang, G. Seidler, B.H. Ma and C.U. Segre, *Physica C* **179**, 405-410 (1991).
55. "Superconductivity and charge transfer compensation by direct doping in the $\text{La}_{1+x}\text{Ca}_y\text{Ba}_{2-x-y}\text{Cu}_3\text{O}_{7+\delta}$ system", T. Mertelj, P. Št'astný, F.C. Maticotta, P. Ganguly, C.U. Segre and D. Mihailovic, *Physica C* **183**, 11-16 (1991).
56. "Defect, defect ordering, structural coherence and superconductivity in the 123 copper oxides", J.D. Jorgensen, D.G. Hinks, P.G. Radaelli, Shiyong Pei, P. Lightfoot, B. Dabrowski, C.U. Segre and B.A. Hunter, *Physica C* **185-189**, 184-189 (1991).
57. "Microstructural and transport properties of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ films produced by laser ablation from a $\text{BaF}_2/\text{Y}_2\text{O}_3/\text{CuO}$ target", R.L. Burton, C.A. Bohn, S.W. Short, H.O. Marcy, D.C. DeGroot, C.R. Kannewurf and C.U. Segre, *Physica C* **190**, 569-580 (1992).
58. "Structural inhomogeneities in oxygen-deficient $\text{ErBa}_2\text{Cu}_3\text{O}_{6+\delta}$ associated with the tetragonal-to-orthorhombic transition: evidence of first-order behavior", P.G. Radaelli, C.U. Segre, D.G. Hinks and J.D. Jorgensen, *Phys. Rev. B* **45**, 4923-4949 (1992).
59. "The effect of reaction conditions on the $\text{Bi}_{1.6}\text{Pb}_{0.4}\text{Sr}_{2-x}\text{Pr}_x\text{CuO}_{6+\delta}$ system", N. Leyarovska, P. Št'astný, F.C. Maticotta, Q. Jiang, D. Pal, C.U. Segre, S. Bernik and C. Schmid, *Physica C* **193**, 441-448 (1992).
60. "Low-energy spin fluctuations in $\text{YBa}_2\text{Cu}_3\text{O}_{6.1}$ and $\text{ErBa}_2\text{Cu}_3\text{O}_{6+\delta}$ a Cu(1) T(1) NQR study", S.G. Jang, C. Bucci, R. DeRenzi, G. Guidi, M. Varotto, C. Segre and P. Radaelli, *Physica C* **226**, 301-310 (1994).
61. "Local configurations in $\text{ErBa}_2\text{Cu}_3\text{O}_{6+\delta}$ for $0.15 \leq x \leq 0.9$ ", M. Varotto, G. Amoretti, C. Bucci, R. DeRenzi, G. Guidi, S.G. Jang, P. Radaelli and C. Segre, *Physica C* **235-240**, 1261-1262 (1994).

62. "Electronic/Ionic conductivity and oxygen diffusion coefficient of the Sr-Fe-Co-O system", B. Ma, J-H. Park, C.U. Segre and U. Balachandran, *Mat. Res. Symp. Proc.* **393**, eds. D.H. Dougherty, B. Vyas, T. Takamura, J.R. Hutt, p49 (Materials Research Society, Pittsburgh, PA, 1995).
63. "Electrical properties and defect structure in the Sr-Fe-Co-O system", B. Ma, J-H. Park, C.U. Segre and U. Balachandran, *Mat. Res. Symp. Proc.* **411**, p163 (Materials Research Society, Pittsburgh, PA, 1996).
64. "Electrical transport properties and defect structure of SrFeCo_{0.5}O_x", B. Ma, U. Balachandran, J-H. Park and C.U. Segre, *J. Electrochem. Soc.* **143**, 1736-1744 (1996).
65. "Determination of chemical diffusion coefficient of SrFeCo_{0.5}O_x by the conductivity relaxation method", B. Ma, U. Balachandran, J-H. Park and C.U. Segre, *Sol. St. Ionics* **83**, 65-71 (1996).
66. "Methanol oxidation on single phase Pt-Ru-Os ternary alloys", K.L. Ley, Renxuan Liu, Cong Pu, Qinbai Fan, N. Leyarovska, C.U. Segre and E.S. Smotkin, *J. Electrochem. Soc.* **144**, 1543-1548 (1996).
67. "Comparison of conductometric humidity-sensing polymers", H. Wang, C.D. Feng, S.L. Sun, C.U. Segre and J.R. Stetter, *Sensors and Actuators B - Chemical* **40**, 211-216 (1997).
68. "Humidity sensing properties of Nafion and sol-gel derived SiO₂/Nafion composite thin films", C.D. Feng, S.L. Sun, H. Wang, C.U. Segre and J.R. Stetter, *Sensors and Actuators B - Chemical* **40**, 217-222 (1997).
69. "A bent Laue analyzer for fluorescence EXAFS detection", Z. Zhong, D. Chapman, B. Bunker, G. Bunker, R. Fischetti, C. Segre, *J. Synchrotron Rad.* **6**, 212-214 (1999).
70. "A bent Laue analyzer detection system for dilute fluorescence XAS", C. Karanfil, Z. Zhong, L.D. Chapman, R. Fischetti, G.B. Bunker, C.U. Segre and B.A. Bunker, CP521, *Synchrotron Radiation Instrumentation: Eleventh U.S. National Conference*, ed. P. Pianetta, et al., p178-182, (American Institute of Physics, New York, 2000).
71. "A Robust cryogenic crystal design in use at the APS", I. Ivanov, G. Rosenbaum, J. Chrzas, R. Fischetti, C.U. Segre and L.D. Chapman, CP521, *Synchrotron Radiation Instrumentation: Eleventh U.S. National Conference*, ed. P. Pianetta, et al., p271-275, (American Institute of Physics, New York, 2000).
72. "A 'beam cleaner' for harmonic selection/rejection", C. Karanfil, L.D. Chapman, G.B. Bunker, C.U. Segre and N.E. Leyarovska, CP521, *Synchrotron Radiation Instrumentation: Eleventh U.S. National Conference*, ed. P. Pianetta, et al., p276-282, (American Institute of Physics, New York, 2000).
73. "The MRCAT insertion device beamline at the Advanced Photon Source", C.U. Segre, N.E. Leyarovska, L.D. Chapman, W.M. Lavender, P.W. Plag, A.S. King, A.J. Kropf, B.A. Bunker, K.M. Kemner, P. Dutta, R.S. Duran and J. Kaduk, CP521, *Synchrotron Radiation Instrumentation: Eleventh U.S. National Conference*, ed. P. Pianetta, et al., p419-422, (American Institute of Physics, New York, 2000).
74. "In-situ XANES study of carbon supported Pt-Ru anode electrocatalyst for reformate-air polymer electrolyte fuel cell", R. Viswanathan, G. Hou, R. Liu, S.R. Bare, F. Modica, G. Mickelson, C.U. Segre, N.E. Leyarovska, T. Chikyow and E.S. Smotkin, *J. Phys. Chem. B* **106**, 3458-3465 (2002).
75. "Nondestructive analysis of phase evolution and microstructure development in Ag/(Bi,Pb)₂Sr₂Ca₂Cu₃O_x composite superconductor by 25keV transmission x-ray diffraction", V.A. Maroni, K. Venkataraman, A.J. Kropf, C.U. Segre, Y. Huangc, G.N. Riley, Jr, *Physica C* **382**, 21-26 (2002).
76. "Bent silicon crystal in the Laue geometry to resolve x-ray fluorescence for x-ray absorption spectroscopy", J.A. Kropf, R.J. Finch, A.J. Fortner, S. Aase, C. Karanfil, C.U. Segre, J. Terry, G. Bunker, L.D. Chapman, *Rev. Sci. Inst.*, **74**, 4696-4702 (2003).

77. "Detection of interfacial strain and phase separation in $\text{MBa}_2\text{Cu}_3\text{O}_{7-x}$ Thin Films Using Raman Spectroscopy and X-ray Diffraction Space Mapping", K. Venkataraman, A.J. Kropf, C.U. Segre, Q.X. Jia, A. Goyal, B.W. Kang, S. Chattopadhyay, H. You, and V.A. Maroni, *Physica C*, **402**, 1 (2004).
78. "Effect of Mn concentration on the structural, optical and magnetic properties of GaMnN", G. Thaler, R. Frazier, B. Gila, J. Stapleton, M. Davidson, C.R. Abernathy, S.J. Pearton and C. U. Segre, *Appl. Phys. Lett.*, **84**, 1314-1316 (2004).
79. "Effect of nucleation layer on the magnetic properties of GaMnN", G. Thaler, R. Frazier, B. Gila, J. Stapleton, M. Davidson, C.R. Abernathy and C. U. Segre, *Appl. Phys. Lett.*, **84**, 2578-2580 (2004).
80. "XRD and XPS analysis of as-prepared and conditioned DMFC array membrane electrode assemblies", R.R. Diaz-Morales, R. Liu, E. Fachini, G. Chen, C.U. Segre, A. Martinez, C. Cabrera and E.S. Smotkin, *J. Electrochem. Soc.* **151**, A1314 (2004).
81. "A device for selecting and rejecting x-ray harmonics in synchrotron radiation beams", C. Karanfil, D. Chapman, C.U. Segre, G. Bunker, *J. Synchrotron Rad.* **11**, (5) September, 393-398 (2004).
82. "SAXS Study of the nucleation of glycine crystals from a supersaturated solution", S. Chattopadhyay, D. Erdemir, J.M.B. Evans, J. Ilavsky, H. Amenitsch, C.U. Segre and A.S. Myerson, *Cryst. Growth & Design* **5**, 523-527 (2005).
83. "Investigation of size effects in magnetoelectric BiFeO_3 ", S. Chattopadhyay, S.D. Kelly, V.R. Palkar, L. Fan, C.U. Segre, *Physica Scripta* **T115**, 709-713 (2005).
84. "Pt and Ru x-ray absorption spectroscopy of PtRu anode catalysts in operating direct methanol fuel cells", S. Stoupin, E-H. Chung, S. Chattopadhyay, C.U. Segre and E.S. Smotkin, *J. Phys. Chem. B* **110**, 9932-9938 (2006).
85. "Spectroscopic Studies of Pb Corrosion of Reactor Materials", S. Liu, D. Olive, J. Terry, and C.U. Segre, *Trans. Am. Nuclear Soc.* **95**, 951 (2006).
86. "High concentration manganese doping of ferroelectric PbTiO_3 ", S. Stoupin, S. Chattopadhyay, T. Bolin and C.U. Segre, *Solid State Commun.* **144**, 46-49 (2007).
87. "Relationship between self-association of glycine molecules in supersaturated solutions and solid state outcome", D. Erdemir, S. Chattopadhyay, L. Guo, J. Ilavsky, H. Amenitsch, C.U. Segre and A.S. Myerson, *Phys. Rev. Lett.* **99**, 115702 (2007).
88. "EXAFS studies of nanocrystals of $\text{Zn}_{1-x}\text{Mn}_x\text{O}$: a dilute magnetic semiconductor oxide system", S. Chattopadhyay, S.D. Kelly, T. Shibata, R. Viswanatha, M. Balasubramanian, S. Stoupin, C.U. Segre, and D.D. Sarma, *AIP Conf. Proc.* **882**, pp. 809-811 (2007).
89. "Synchrotron radiation-based x-ray analysis of bronze artifacts from and Iron Age site in the Judean Hills", E.S. Friedman, A.J. Brody, M.L. Young, J.D. Almer, C.U. Segre, and S.M. Mini, *J. Archaeological Science* **35**, 1951-1960 (2008).
90. "Niobium speciation at the metal/oxide interface of corroded niobium-doped zircalloys: an x-ray absorption near-edge structure study", A. Froideval, C. Degueldre, C.U. Segre, M.A. Pouchon and D. Grolimund, *Corrosion Science* **50**, 1313-1320 (2008).
91. "Structural analysis of sonochemically prepared PtRu versus Johnson Matthey PtRu in operating direct methanol fuel cells", S. Stoupin, H. Rivera, Z. Li, C.U. Segre, C. Korzeniewski, D.J. Casadonte, H. Inoue and E.S. Smotkin, *Phys. Chem. Chem. Phys.* **10**, 6430-6437 (2008).

92. “An x-ray absorption spectroscopy study of Mo oxidation in Pb at elevated temperatures”, S. Liu, D. Olive, J. Terry and C.U. Segre, *J. Nucl. Mat.* **392**, 259-263 (2009).
93. “Embedded cluster Δ -XANES modeling of adsorption processes on Pt”, E.A. Lewis, C.U. Segre, and E.S. Smotkin, *Electrochim. Acta* **54**, 7181-7185 (2009).
94. “XAFS studies on a modified Al-Si hypoeutectic alloy”, V.S. Prakash Srirangam, S. Chattopadhyay, T. Shibata, J.A. Kaduk, J.T. Miller, C.U. Segre and S. Shankar, *J. Phys. Conf. Series* **190**, 012068 (2009).
95. “In situ XAFS studies of the oxygen reduction reaction on carbon supported Pt and PtNi(1:1) catalysts”, Q. Jia, E.A. Lewis, E.S. Smotkin, and C.U. Segre, *J. Phys. Conf. Series* **190**, 012157 (2009).
96. “The new MRCAT (Sector 10) bending magnet beamline at the Advanced Photon Source”, A.J. Kropf, J. Katsoudas, S. Chattopadhyay, T. Shibata, E.A. Lang, V.N. Zyryanov, B. Ravel, K. McIvor, K.M. Kemner, K.G. Scheckel, S.R. Bare, J. Terry, S.D. Kelly, B.A. Bunker, and C.U. Segre, *AIP Conference Proceedings* **1234**, 299-302 (2010).
97. “Electrodeposition assisted x-ray lithography: single step approach”, E.V. Timofeeva, J.P. Katsoudas and C.U. Segre, *ECS Trans.* **33**, 319-326 (2010).
98. “Local compositional environment of Er in ZnS:ErF₃ thin film electroluminescent phosphors”, M.R. Davidson, S. Stoupin, D. DeVito, J. Collingwood, C.U. Segre and P.H. Holloway, *J. Appl. Phys.* **109**, 054505 (2011).
99. “Operando x-ray absorption and infrared fuel cell spectroscopy”, E.A. Lewis, I. Kendrick, C. Grice, C.U. Segre and E.S. Smotkin, *Electrochim. Acta* **56**, 8827-8832 (2011).
100. “Photoemission studies of fluorine functionalized porous graphitic carbon”, H. Ganegoda, D.S. Jensen, D. Olive, L Cheng, C.U. Segre, M.R. Linford, and J. Terry, *J. Appl. Phys.* **111**, 053705 (2012).
101. “Quantitative performance measurements of bent crystal Laue analyzers for X-ray fluorescence spectroscopy”, C. Karanfil, G. Bunker, M. Newville, C.U. Segre, and L.D. Chapman, *J. Synchrotron Radiation* **19**, 375-380 (2012).
102. “Correlation between the piezo-Barkhausen effect and the fatigue limit of steel”, T. Erber, S.A. Guralnick, C.U. Segre, and W. Tong, *J. Phys. D: Appl. Phys.* **45**, 465002 (2012).
103. “Structure-property-activity correlations of Pt-bimetallic nanoparticles: a theoretical study”, Q. Jia, C.U. Segre, D. Ramaker, K. Caldwell, M. Trahan, S. Mukerjee, *Electrochimica Acta* **88**, 604–613 (2013).
104. “Temperature dependence of aliovalent-vanadium doping in LiFePO₄ Cathodes”, K.L. Harrison, C.A. Bridges, M.P. Paranthaman, C.U. Segre, J. Katsoudas, V.A. Maroni, J.C. Idrobo, J.B. Goodenough, and A. Manthiram, *Chem. Mater.* **25** 768-781 (2013).
105. “In situ Ru K-Edge x-ray absorption spectroscopy study of methanol oxidation mechanisms on model sub-monolayer Ru on Pt nanoparticle electrocatalyst”, C.J. Pelliccione, E.V. Timofeeva, J.P. Katsoudas, and C.U. Segre, *J. Phys. Chem. C* **117**, 18904–18912 (2013).
106. “X-ray powder diffraction refinement of PbTi_{1-x}Fe_xO_{3- δ} solid solution series”, H. Ganegoda, J.A. Kaduk, and C.U. Segre, *Powder Diffraction* **28** (3) (to be published, 2013; <http://dx.doi.org/10.1017/S0885715613000511>).
107. “Evidence for core-shell nanoclusters in oxygen dispersion strengthened steels measured using X-ray absorption spectroscopy”, S. Liu, G.R. Odette, and C.U. Segre, *J. Nucl. Mater.* **445**, 50-56 (2014).
108. “Structural and magnetic effects of mechanically grinding Co₃(OH)₂(C₄O₄)₂·3H₂O”, J.H. McNeely, K. Falaneh, H. Ganegoda, R. Clark, C.U. Segre, and B. Cage, *Polyhedron* **79**, 60-65 (2014).

109. “Chemical and electrochemical lithiation of LiVOPO₄ cathodes for lithium-ion batteries”, K.L. Harrison , C.A. Bridges , C.U. Segre , C.D. Varnado , D. Applestone , C.W. Bielawski , M.P. Paranthaman, and A. Manthiram, *Chem. Mater.* **26**, 3849-3861 (2014).
110. “X-ray absorption spectroscopy elucidates the impact of structural disorder on electron mobility in amorphous zinc-tin-oxide thin films”, S.C. Siah, S.W. Lee, Y.S. Lee, J. Heo, T. Shibata, C.U. Segre, R.G. Gordon, and T. Buonassisi, *Appl. Phys. Lett.* **104**, 242113 (2014).
111. “Microscopic description of the evolution of the local structure and an evaluation of the chemical pressure concept in a solid solution”, S. Mukherjee, A. Nag, V. Kocovski, P.K. Santra, M. Balasubramanian, S. Chattopadhyay, T. Shibata, F. Schaefer, J. Ruzs, C. Gerard, O. Eriksson, C.U. Segre, and D.D. Sarma, *Phys. Rev. B* **89**, 224105 (2014).
112. “Note: Sample chamber for in situ x-ray absorption spectroscopy studies of battery materials”, C.J. Pelliccione, E.V. Timofeeva, J.P. Katsoudas, and C.U. Segre, *Rev. Sci. Instrum.* **85**, 126180 (2014).
113. “Amorphous W–S–N thin films: the atomic structure behind ultra-low friction”, L. Isaeva, J. Sundberg, S. Mukherjee, C.J. Pelliccione, A. Lindblad, C.U. Segre, U. Jansson, D.D. Sarma, O. Eriksson, and K. Kádas, *Acta Mater.*, **82**, 84-93 (2015).
114. “E-spun composite fibers of collagen and dragline silk protein: fiber mechanics, biocompatibility, and application in stem cell differentiation”, B. Zhu, W. Li, R.V. Lewis, C.U. Segre, and R. Wang, *Biomacromol.* **16**, 202-213 (2015).
115. “Efficient solid-state light-emitting CuCdS nanocrystals synthesized in air”, A.H. Khan, A. Dalui, S. Mukherjee, C.U. Segre, D.D. Sarma, and S. Acharya, *Angew. Chem.*, to be published (2015).
116. “In situ XAS study of the capacity fading mechanism in hybrid Sn₃O₂(OH)₂/graphite battery anode nanomaterials”, C.J. Pelliccione, E.V. Timofeeva, and C.U. Segre, *Chem. Mater.*, to be published (2015).

Monographs and Journal Articles

1. “Chemical Insights Obtained by Modelling the Structure of High-Temperature Superconductors Using AX₃ Close-Packing and Transferable Single Atom Parameters”, P. Ganguly. F.C. Maticotta and C.U. Segre, *Synthesis and Characterization of High-Temperature Superconductors* eds. J.J. Pouch, S.A. Alterovitz R.R. Romanofsky and A.F. Hepp, *Materials Science Forum* **130-132**, 493-521 (Trans Tech, Brookfield VT, 1993).
2. “Diffraction Enhanced Imaging Applied to Materials Science and Medicine”, D. Chapman, W. Thomlinson, Z. Zhong, R.E. Johnston, E. Pisano, D. Washburn, D. Sayers and C.U. Segre, *Synchrotron Radiation News* **11**, 4-11 (1998).
3. “Exploring new routes for the development of functional nanomaterials using extreme pressure”, K. Lipinska, P. Kalita, O. Hemmers, S. Sinogeikin, G. Mariotto, C. Segre, and Y. Ohki, *Processing and Properties of Advanced Ceramics and Composites II Book Series: Ceramic Transactions* **220**, 91-96 (2010).
4. “Operando X-Ray Absorption Spectroscopy of Polymer Electrolyte Fuel Cells”, E.S. Smotkin and C.U. Segre, *Fuel Cell Science: Theory, Fundamentals and Biocatalysis* eds. A. Wieckowski and J.K. Nørskov pp 545-564 (John Wiley & Sons, Hoboken NJ, 2010).

Patents

1. “Rechargeable Nanoelectrofuel Electrodes and Devices for High Energy Density Flow Batteries” (filed USPTO 05-10-13), inventors E. Timofeeva, J. Katsoudas, D. Singh, and C.U. Segre (provisional).