

# CURRICULUM VITAE

# HARRY B. RADOUSKY

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## **EDUCATION:**

University of Illinois, Chicago      B.A. in Physics, June, 1976  
University of Illinois, Chicago      M.S. in Physics, June, 1978  
University of Illinois, Chicago      Ph.D. in Solid State Physics, June 1982

## HONORS

- Who's Who in America Science and Engineering, 5<sup>th</sup> Edition
  - Recognized in Science Citation Classics for a paper, which is among the top 10 cited works in the field of Materials Science in the past decade. <http://in-cites.com/papers/DrHarryRadousky.html>
  - LLNL Chemistry and Material Science Associate Director Award for Excellence in Publication (March, 2004) Citation - For a series of three outstanding papers in the area of laser damage in optical materials published in the Physical Review Letters within a period of nine months.

## RECENT LETTER PUBLICATIONS

- S. G. Demos, M. Staggs, and H. B. Radousky, Endoscopic Method For Large-Depth Optical Imaging Of Interior Body Organs. *Electronics Letters*, V38(N4):155-157, 2002.
  - H. Jiang, J. McNary, H. W. K. Tom, M. Yan, H. B. Radousky, and S. G. Demos, Nanosecond time-resolved multi-probe imaging of laser damage in transparent solids. *Applied Physics Letters* 81, 3149, 2002.
  - C.S. Liu, Nicholas Kioussis, S.G. Demos, H.B. Radousky, Electron - or Hole-assisted Reactions of H Defects in Hydrogen-bonded KDP. *PRL*, 91, 15505, 2003.
  - C.W. Carr, H.B. Radousky and S.G. Demos, Wavelength dependence of laser induced damage: Determining the damage initiation mechanisms. *PRL*, 91, 27402, 2003.
  - C.W. Carr, H.B. Radousky, A.M. Rubenchik, M.D. Feit, S.G. Demos, Localized dynamics during laser-induced damage in optical materials. *PRL* 92, 87401, 2004.
  - N. Nersessian, S. Or, G. P. Carman, W. Choe, H.B. Radousky, M. McElfresh, V. K. Pecharsky and A. O Pecharsky, A New  $Gd_5Si_2Ge_2$  Composite for Actuator Applications. *Applied Physics Letters*, 84, 4801 (2004).
  - A. E. Berkowitz, H. Harper, D. J. Smith, H. Hu, Q. Jiang, V. C. Solomon and H. B. Radousky, "Hollow Metallic Microspheres Produced by Spark Erosion", *Applied Physics Letters*, in press, August 2, 2004.

## **WORK HISTORY:**

1996 - Present	<b>Deputy Director - University Relations Program</b> Lawrence Livermore National Laboratory
1997 - Present	<b>Adjunct Professor,</b> Department of Physics University of California, Davis

1982 - Present	<b>Experimental Physicist</b> Lawrence Livermore National Laboratory
2000 - 2001	<b>Acting Director - University Relations Program</b> Lawrence Livermore National Laboratory
2000 - 2001	<b>Director - Laboratory Collaborations</b> UC - Office of the President
1997 - 2000	<b>Founding Director - Materials Research Institute</b> Lawrence Livermore National laboratory
1994 - 1994	<b>Project Manager - (LBL) ER - LTT CRADAs</b> Technology Transfer Department Lawrence Berkeley Laboratory
1991 - 1997	<b>Adjunct Associate Professor,</b> Department of Physics University of California, Davis
1990 - 1994	<b>Group Leader - Solid State Experiments</b> Physical Sciences Department (H-Division) Lawrence Livermore National Laboratory
1988 - 1991	<b>Task Leader – Superconducting Properties</b> LLNL Superconductivity Program Lawrence Livermore National Laboratory
1985 - 1991	<b>Adjunct Lecturer</b> Department of Applied Science University of California, Davis
1982 - 1982	<b>Postdoctoral Appointment</b> Argonne National Laboratory,

### **RESEARCH EXPERIENCE:**

#### NanoScience

Basic properties of magnetic nano-particles, with applications to biosensors, actuators and damping materials. Imaging of laser-induced reactions of defect nano-clusters.

#### Optical Materials

Spectroscopic studies of defects in KDP crystals related to laser damage for NIF. Spectroscopies in current use include micro-Raman, absorption, time-resolved emission and luminescence. First measurements of temperature in KDP during a laser damage event.

#### Biotechnology Research

Deep sub-surface spectroscopic imaging for cancer detection. Organized three LLNL/UC-Davis mini-conferences to promote collaborative interactions.

### Industrial Collaborations

Extensive experience in working with industrial partners. Spent 5 months in 1994 on "change of station" assignment to LBNL as Project Manager for their Energy Research (ER) - Technology Transfer CRADA program.

### High Pressure Research

- *Discovery of shock-induced cooling (nitrogen).*
- LLNL Two-Stage Light-Gas Gun: Shock pyrometry and sound velocity measurements of simple molecular and ionic systems in the Mbar regime.
- Diamond Anvil Cells: Positron annihilation studies of the electronic structure of metals at high pressure. Optical properties of superconductors under pressure.
- Lasers: Shock dynamics and temperature of KDP during a laser damage event

### Luminescent Polymers/Semiconductors

Optical properties and degradation studies of luminescent polymers for flat panel displays. Optical properties of semiconductor crystals, films and superlattices, including Raman, photoluminescence and femtosecond spectroscopies.

### Laser Physics

Extensive use of lasers for Raman/photoluminescence spectroscopy (KDP, superconductors, semiconductors, and polymers), laser ablation of superconducting materials, and femtosecond pump-probe spectroscopy.

### Superconductivity/Magnetism

- Raman spectroscopy, magnetization, positron annihilation, resistivity, heat capacity and superoxygenation studies of high  $T_c$  superconductors/magnetic oxides.
- Major contributions include developing a model for the *suppression of superconductivity in YBCO<sub>7</sub> with the addition of Pr for Y*, and developing a model for the *restoration of superconductivity in YBCO<sub>6</sub> with the addition of Br*.
- **Magnetic Properties of Heavy Fermion Systems**, (World Scientific Publishing, October, 2000), H. B. Radousky (editor). This is Volume 11 in the series "Modern Condensed Matter Physics."

### **TEACHING EXPERIENCE:**

- UC-Davis Department of Applied Science:
  - Graduate level Solid-state Physics (Fall 1985-Spring 1986, Spring 1987)
  - Graduate course in Superconductivity (Spring 1988)
- UC-Davis Physics Department:
  - Electro-magnetic Properties of Superconductors, Spring 1994
  - Physics of Baseball, Fall 1996, Spring 1999, Spring 2002, Spring 2004

### **CONFERENCE ORGANIZATION**

Member of the organizing committee of the 1987 Conference on Shock Waves in Condensed Matter, Monterey, CA July 20-23, 1987.

Organized UC-Davis - LLNL Biotechnology Collaboration Forum I, February 10, 1995  
Organized UC-Davis - LLNL Biotechnology Collaboration Forum II, June 23, 1995  
Organized UC-Davis - LLNL Biotechnology Collaboration Forum III, March 29, 1996

Organizing committee for the International Workshop on Electron Correlations, June, 1998

Organizing Committee for the Tri-Lab Course of Dislocations, June 1998

Organizing Committee for Physics by the Bay Meeting, September 25, 1999  
Organizing Committee for Physics by the Bay Meeting, September 16, 2000

Co-Chair CLC Novel Materials Workshop, held at LLNL Materials Research Institute, September 13-14, 1999

### **PROFESSIONAL ORGANIZATIONS:**

- Member of American Physical Society, Division of Condensed Matter Physics
- Member of the Materials Research Society
- Member SPIE

### **JOURNAL PUBLICATIONS:**

1. 1982 Radousky, H.B., T. Jarlborg, G.S. Knapp, and A.J. Freeman. **Assessment of Theoretical Determinations of the Electron-Phonon Coupling Parameter in Metals and Intermetallic Compounds.** Physical Review B26:1208.
2. 1982 Fradin, F.Y., H.B. Radousky, N.J. Zaluzec, G.S. Knapp, and J.W. Downey. **Superconductivity in the Y-Ir System.** Materials Research Bulletin 17:427.
3. 1983 Radousky, H.B., G.S. Knapp, A.T. Aldred, and J.S. Kouvel. **Superconducting and Magnetic Properties of  $Y_{0.9}R_{0.1}Rh_4B_4$ .** Physical Review B27:4236.
4. 1983 Radousky, H.B., D.G. Niarchos, B.D. Dunlap, and G.S. Knapp. **Heat Capacity Studies of Crystal Field Effects in  $RRh_4B_4$  Compounds.** Physical Review B27:5526.
5. 1983 Radousky, H.B., A.T. Aldred, G.S. Knapp, and J.S. Kouvel. **Unusual Critical Field Behavior in  $Y_{1-x}Er_xRh_4B_4$ .** Physical Review B28:2850.
6. 1983 Radousky, H.B., G.S. Knapp, J.W. Downey, A.T. Aldred, and A.J. Freeman. **Magnetic Properties of  $HfZn_2$ .** Journal of Magn. Magn. Materials 40:117.
7. 1984 Holmes, N.C., H.B. Radousky, M.S. Moss, and W.J. Nellis. **Silica at Ultra High Temperature and Expanded Volume.** Applied Physics Letters 45:626.
8. 1985 Radousky, H.B., M. Ross, A.C. Mitchell, and W.J. Nellis. **Shock Temperatures and Melting in CsI.** Physical Review B31:145.

9. 1986 Nellis, W.J., H.B. Radousky, T.H. Geballe, R.H. Hammond, R. Koch, and G.W. Hull, Jr. **Superconductivity of Nb Recovered from Megabar Dynamic Pressures.** Applied Physics Letters 49:413.
10. 1986 Radousky, H.B., W.J. Nellis, M. Ross, D.C. Hamilton, and A.C. Mitchell. **Molecular Dissociation and Shock-Induced Cooling in Fluid Nitrogen at High Densities and Temperatures.** Physical Review Letters 57:2419.
11. 1988 Radousky, H.B. and M. Ross. **Shock-Induced Cooling in Dense Fluid Nitrogen.** High Pressure Research 1:39.
12. 1988 Radousky, H.B. and M. Ross. **Shock Temperature Measurements in Dense Fluid Xenon.** Physics Letters A129:43.
13. 1988 Nellis, W.J., D.C. Hamilton, N.C. Holmes, H.B. Radousky, F.H. Ree, and A.C. Mitchell, "The Nature of the Interior of Uranus Based on Studies of Planetary Ices at High Dynamic Pressure," Science 240:779.
14. 1989 Peng, J.L., P. Klavins, R.N. Shelton, H.B. Radousky, P.A. Hahn, L. Bernardez, and M. Costantino. **Preparation, Characterization and Superconducting Properties of Tetragonal LaBaCaCu<sub>3</sub>O<sub>7</sub>.** Physical Review B39:9074.
15. 1989 Radousky, H.B., K.F. McCarty, J.L. Peng, and R.N. Shelton. **Preparation and Raman Analysis of Single Phase Y<sub>1-x</sub>Pr<sub>x</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>.** Physical Review B, Rapid Communications 39:12, 383.
16. 1989 Peng, J.L., R.N. Shelton, and H.B. Radousky. **Preparation of and Magnetic Scattering in Nd<sub>2-x</sub>Ce<sub>x</sub>CuO<sub>4</sub>.** Solid State Communications 71:479.
17. 1989 McCarty, K.F., H.B. Radousky, D.G. Hinks, Y. Zeng, A.W. Mitchell, T.J. Folkerts, and R.N. Shelton. **Electron-Phonon Coupling in Superconducting Ba<sub>0.6</sub>K<sub>0.4</sub>BiO<sub>3</sub>: A Raman Scattering Study.** Physical Review B, Rapid Communications 40:2662.
18. 1989 Peng, J.L., R.N. Shelton, H.B. Radousky, P.A. Hahn, and A.L. Bernardez. **Upper Critical Field and Normal State Properties of Single Phase Y<sub>1-x</sub>Pr<sub>x</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub> Compounds.** Physical Review B 40:4517.
19. 1989 Radousky, H.B. and A.C. Mitchell. **A Fast UV/Visible Pyrometer for Shock Temperature Measurements to 20,000 K.** Review Scientific Instruments 60:3707.
20. 1990 Peng, J.L., R.N. Shelton, and H.B. Radousky. **Kondo Effect and Superconductivity in Nd<sub>2-x</sub>Ce<sub>x</sub>CuO<sub>4</sub> Compounds.** Physical Review B41:187.
21. 1990 McCarty, K.F., J.Z. Liu, R.N. Shelton, and H.B. Radousky. **Raman-active Phonons of a Twin-Free YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub> Crystal: A Complete Polarization Study.** Physical Review B41:8792.

22. 1990 Radousky, H.B., R.S. Glass, P.A. Hahn, M.J. Fluss, R.G. Meisenheimer, B.P. Bonner, C.I. Merzbacher, E.M. Larson, K.D. McKeegan, J.C. O'Brien, J.L. Peng, R.N. Shelton, and K.F. McCarty. **Metallization and Superconducting Properties of  $\text{YBa}_2\text{Cu}_3\text{O}_{6.2}\text{Br}_y$** . Physical Review B41:11140.
23. 1990 Bonner, B.P., R.L. Reichlin, H.B. Radousky, T.J. Folkerts, and R.N. Shelton. **Anomalous Pressure Dependence of Optical Reflectivity in the Superconductor  $\text{Ba}_{1-x}\text{K}_x\text{BiO}_3$** . Physical Review B41:11576.
24. 1990 Radousky, H.B. and A.C. Mitchell. **Shock Temperature Measurements and Planetary Ices:  $\text{NH}_3$ ,  $\text{CH}_4$ , and Synthetic Uranus**. Journal of Chemical Physics 93:8235.
25. 1990 McCarty, K.F., J.Z. Liu, R.N. Shelton, and H.B. Radousky. **Electronic Raman Scattering of  $\text{YBa}_2\text{Cu}_3\text{O}_7$  Using C-Axis Polarization: Evidence for Two Characteristic Superconducting Energies**. Physical Review B42:9973.
26. 1991 Nellis, W.J., H.B. Radousky, D.C. Hamilton, A.C. Mitchell, N.C. Holmes, K.B. Christianson, and M. Van Thiel. **Equation-of-State, Shock Temperature and Electrical Conductivity Data of Dense Fluid Nitrogen in the Region of the Dissociative Phase Transition**. Journal of Chemical Physics 94:2244.
27. 1991 Phillips, N.E., R.A. Fisher, R. Caspara, A. Amato, H.B. Radousky, J.L. Peng, L. Zhang, and R.N. Shelton. **Magnetic Ordering, Hyperfine and "Linear" Contributions to the Low-Temperature Specific Heat of  $(\text{Y}_{1-x}\text{Pr}_x)\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$** . Physical Review B, Rapid Communications B43: 11488.
28. 1991 McCarty, K.F., H.B. Radousky, J.Z. Liu, and R.N. Shelton. **Temperature Dependence of the Linewidths of the Raman-Active Phonons of  $\text{YBa}_2\text{Cu}_3\text{O}_7$ : Evidence for a Superconducting Gap Between 440 and 500  $\text{cm}^{-1}$** . Physical Review B, Rapid Communications 43:13751.
29. 1991 Yoo, C.S., H.B. Radousky, N.C. Holmes, and N.M. Edelstein. **Luminescence of  $\text{Sm}^{2+}$  Ions as a Probe of the Pressure-Induced Phase Transition in  $\text{SrF}_2$** . Physical Review B44:830.
30. 1991 McCarty, K.F., J.Z. Liu, Y.X. Jia, R.N. Shelton, and H.B. Radousky. **Effect of Gold-Doping on the Energy Gap of  $\text{YBa}_2\text{Cu}_3\text{O}_7$  as Determined by Raman Scattering**. Solid State Communications 79:359-362.
31. 1992 Wang, Y., A.M. Rao, J.G. Zhang, X.X. Bi, P.C. Eklund, M.S. Dresselhaus, P.P. Nguyen, J.S. Moodera, G. Dresselhaus, H.B. Radousky, R.S. Glass, M.J. Fluss, and J.Z. Liu. **ab-Plane Optical Properties of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}\text{Br}_y$  Single Crystals**. Physical Review B45:2523-2526.
32. 1992 McCarty, K.F., J.Z. Liu, Y.X. Jia, R.N. Shelton, and H.B. Radousky. **Comparison of the Raman-Active Phonons of  $\text{YBa}_2\text{Cu}_3\text{O}_7$  Crystals Grown in Gold and Zirconia Crucibles**. Physica C192:331-350.

33. 1992 Tobin, J.G., C.G. Olson, C. Gu, J.Z. Liu, F.R. Solal, M.J. Fluss, R.H. Howell, J.C. O'Brien, H.B. Radousky, and P.A. Sterne. **Valence Bands and Fermi-Surface Topology of Untwinned Single-Crystal  $\text{YB}_2\text{Cu}_3\text{O}_{6.9}$ .** Physical Review B45:5563-5576.
34. 1992 Radousky, H.B. **A Review of the Superconducting and Normal State Properties of  $\text{Y}_{1-x}\text{Pr}_x\text{Ba}_2\text{Cu}_3\text{O}_7$ .** Journal of Materials Research 7:1917-1955.
35. 1992 Jia, J.X., J.Z. Liu, M.D. Lan, P. Klavins, R.N. Shelton, and H.B. Radousky. **Upper Critical Field  $H_{c2}$  of Single-Crystal  $\text{Y}_{1-x}\text{Pr}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$ .** Physical Review B45:10609-10615.
36. 1992 McCarty, K.F., J.E. Schirber, D.R. Boehme, H.B. Radousky, J.Z. Liu, and R.N. Shelton. **Dependence of the Excitation Wavelength on the Raman-Active Phonons of YBCO<sub>7</sub>: Search for Landau Damping in Single Domain Crystals.** Physica C200:315-322.
37. 1992 Lan, M.D., J.Z. Liu, R.N. Shelton, H.B. Radousky, B.W. Veal, and J.W. Downey. **Magnetic Properties of Oxygen-Depleted  $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$  Single Crystals.** Physical Review B46:11919-11922.
38. 1992 McCarty, K.F., J.Z. Liu, Y.X. Jia, R.N. Shelton, and H.B. Radousky. **Temperature Dependence of the Phonon Frequencies, Linewidths, and Raman-Continuum Scattering of Single-Domain  $\text{Y}_{0.56}\text{Pr}_{0.44}\text{Ba}_2\text{Cu}_3\text{O}_7$ .** Physical Review B46:11958.
39. 1992 Bennahmias, J., C. O'Brien, H.B. Radousky, T.J. Goodwin, P. Klavins, J.M. Link, C.A. Smith, and R.N. Shelton. **Magnetic, Structural, and Raman Characterization of  $\text{RBa}_2\text{Cu}_2\text{NbO}_8$  ( $\text{R} = \text{Pr, La, and Nd}$ ).** Physical Review B46:11986.
40. 1992 Goodwin, T.J., H.B. Radousky, and R.N. Shelton. **Superconducting, Magnetic, Electronic Transport and Structural Properties of  $\text{R}_{1.5}\text{Ce}_{0.5}\text{Sr}_2\text{Cu}_2\text{NbO}_{10}$ ,  $\text{R}=\text{Pr, Nd, Sm, and Eu}$ .** Physica C204:212-224.
41. 1993 Rosov, N., J. W. Lynn, H. B. Radousky, M. Bennahmias, T. J. Goodwin, P. Klavins, and R. N. Shelton. **Crystal Structure and Magnetic Ordering of the Rare Earth and Cu Moments in RBCNO ( $\text{R} = \text{Nd and Pr}$ ).** Physical Review B47:15256-15264.
42. 1993 Nguyen, P. P., Z. H. Wang, A. M. Rao, M. S. Dresselhaus, J. S. Moodera, G. Dresselhaus, H. B. Radousky, R. S. Glass, and J. Z. Liu. **Transport and Magnetic Properties of  $\text{YBa}_2\text{Cu}_3\text{O}_{6.2}\text{Br}_y$  Single Crystals.** Physical Review B48:1148-1155.
43. 1993 Park, S. J., J. S. Kouvel, H. B. Radousky, and J. Z. Liu. **Cross-Flux Effect as a Vortex Pinning Process in  $\text{YBa}_2\text{Cu}_3\text{O}_7$  and  $\text{Y}_{0.8}\text{Pr}_{0.2}\text{Ba}_2\text{Cu}_3\text{O}_7$  Crystals.** Physical Review B48:13998-14000.

44. 1993 Bennahmias, M., A. F. Bello, D. Back, H. B. Radousky, T. J. Goodwin, P. Klavins, and R. N. Shelton. **Magnetic Properties of Polycrystalline  $R_{1.5}Ce_{0.5}Sr_2CnbO_{10}$  ( $R = Eu, Nd, and Sm$ ) High- $T_c$  Superconducting Ceramics.** Physical Review B48:6525-6532.
45. 1994 Lorenzana, H. E., M. Bennahmias, H. B. Radousky, and M. B. Kruger. **Producing Diamond Anvil Cell Gaskets for Ultrahigh-Pressure Applications Using an Inexpensive Electric Discharge Machine.** Review of Scientific Instruments 65:3540-3543.
46. 1996 Cheng, S.C., V.P. Dravid, T.J. Goodwin, R.N. Shelton, and H.B. Radousky. **Determination of the Valence of Pr in  $(Eu_{1.5-x}Pr_xCe_{0.5})Sr_2Cu_2NbO_{10}$  Superconducting Compounds by Electron-Energy-Loss Spectroscopy.** Physical Review B53:11779-11783.
47. 1996 Bennahmias, M., H.B. Radousky, M. Buford, A. Kebede, M. McIntyre, T.J. Goodwin, and R.N. Shelton. **Magnetic Studies of Ta Doping in  $Pr_{1.5}Ce_{0.5}Sr_2Cu_2NbO_{10}$ .** Physical Review B53:2773-2780.
48. 1996 Bello, A.F., H.B. Radousky, and D.J. Erskine. **Separating the Coherent and Incoherent Effects in Optical Correlation Experiments on Semiconductors and Other Saturable Absorbers.** Review of Scientific Instruments 67:503-511.
49. 1996 Hasan, M.K., J.S. Kouvel, H.B. Radousky, T.J. Goodwin, and R.N. Shelton. **Vortex Pinning in Polycrystalline  $Eu_{1.5-x}Pr_xCe_{0.5}Sr_2Cu_2NbO_{10}$  from Rotational Magnetic Measurements.** Physica C270:216-222.
50. 1997 Goodwin, T.J., H.B. Radousky, R.N. Shelton, M. Bennahmias, J. Lynn, and N. Rosov. **Magnetic Properties in  $Eu_{1.5-x}Pr_xCe_{0.5}Sr_2Cu_2NbO_{10}$ .** Physical Review B55:3297.
51. 1997 Goodwin, T.J., R.N. Shelton, and H.B. Radousky. **Relating Structural Properties and Oxygen Content to the Electronic and Magnetic States of  $(Eu_{1.5-x}Pr_xCe_{0.5})Sr_2Cu_2NbO_{10-\delta}$ .** Physica C282:745-746.
52. 1997 Goodwin, T.J., R.N. Shelton, H.B. Radousky, N. Rosov, and W.J. Lynn. **Pr and Cu Magnetism in  $(Pr_{1.5}Ce_{0.5})Sr_2Cu_2M_{10-\delta}$  ( $M = Nb, Ta$ ): Correlations with a Suppression of Superconductivity.** Physical Review B55:3297-3307.
53. 1997 Goodwin, T.J., H.B. Radousky and R.N. Shelton. **Superconductivity and Magnetism in  $(R_{1.5-x}Pr_xCe_{0.5})Sr_2Cu_2NbO_{10-\delta}$  ( $R = Nd, Sm, Eu$ ): Criteria for Modeling the Suppression of Superconductivity by Pr in High  $T_c$  Cuprates.** Physical Review B56:5144-5147.
54. 1997 Goodwin, T.J., H.B. Radousky, and R.N. Shelton. **Structural Properties and Oxygen Stoichiometry of  $(Pr_{1.5}Ce_{0.5})Sr_2Cu_2TaO_{10-\delta}$  and  $(R_{1.5-x}Pr_xCe_{0.5})Sr_2Cu_2NbO_{10-\delta}$  ( $R = Nd, Sm, Eu$ ) - Correlations with Electronic and Magnetic Properties.** Journal of Solid State Chemistry 133:445-457.

55. 1997 Lorenzana, H.E., J.E. Klepeis, M.J. Lipp, W.J. Evans, H.B. Radousky, and M. vanSchilfgaarde. **High-Pressure Phases of PbF<sub>2</sub>: A Joint Experimental and Theoretical Study.** Physical Review B 56:543-551.
56. 1998 Staub, U., L. Soderholm, R. Osborn, T.J. Goodwin, H.B. Radousky, and R.N. Shelton. **Magnetic Ground State of Pr in (Pr<sub>1.5</sub>Ce<sub>0.5</sub>)Sr<sub>2</sub>Cu<sub>2</sub>NbO<sub>10-x</sub>.** Journal of Physics-Condensed Matter 10:4637-4643.
57. 1998 Demos, S.G., M. Yan, M. Staggs, J.J. DeYoreo, and H.B. Radousky. **Raman Scattering Investigation of KH<sub>2</sub>PO<sub>4</sub> Subsequent to High Fluence Laser Irradiation.** Applied Physics Letters 72:2367-2369.
58. 1999 Bennahmias, M., H.B. Radousky, H.E. Lorenzana, T.J. Goodwin, and R.N. Shelton. **Raman and Magnetic Susceptibility Evidence for a Structural Transition in (Eu<sub>1.5-x</sub>Pr<sub>x</sub>Ce<sub>0.5</sub>)Sr<sub>2</sub>Cu<sub>2</sub>NbO<sub>10</sub> Compounds.** Journal of Raman Spectroscopy 30:543-545.
59. 1999 Demos, S.G., M. Staggs, M. Yan, H.B. Radousky, and J.J. De Yoreo. **Microscopic Fluorescence Imaging of Bulk Defect Clusters in KH<sub>2</sub>PO<sub>4</sub> Crystals.** Optics Letters 24:268-270,271-U7.
60. 1999 Demos, S.G.; M. Staggs, M. Yan, H.B. Radousky, and J.J. De Yoreo. **Investigation of Optically Active Defect Clusters in KH<sub>2</sub>PO<sub>4</sub> Under Laser Photoexcitation.** Journal of Applied Physics 85:3988-3992
61. 2000 Demos, SG; Burnham, A; Wegner, P; Norton, M; Zeller, L; Runkel, M; Kozlowski, MR; Staggs, M; Radousky, HB.. **Surface defect generation in optical materials under high fluence laser irradiation in vacuum.** Electronics Letters 36:566-567.
62. 2000 Demos, SG; Radousky, HB; Alfano, RR. **Deep subsurface imaging in tissues using spectral and polarization filtering.** Optics Express, 7:23-28.
63. 2001 S. G. Demos, Staggs, J. J. De Yoreo, H.B. Radousky, **Imaging of laser-induced reactions of individual defect nano-clusters.** Optics Letters 26, 24-27.
64. 2001 Garces, NY; Stevens, KT; Halliburton, LE; Demos, SG; Radousky, HB; Zaitseva, NP. **Identification of electron and hole traps in KDP crystals,** Journal of Applied Physics, 89:47-52.
65. 2002 Qing Zhang, Nicholas Kioussis, Stavros Demos, Harry Radousky, **Ab initio study of the electronic structure and phase transition in KDP,** Phys. Rev. B 65, 24108 .
66. 2002 Qing Zhang, Nicholas Kioussis, Stavros Demos, Harry Radousky, **New Evidence of the Displace Feature of the Ferroelectric Transition in KDP-type Crystals,** Journal of Physics: Condensed matter 14, 1-5.
67. 2002 S. G. Demos, , M. Staggs, and H. B. Radousky, **Endoscopic Method For Large-Depth Optical Imaging Of Interior Body Organs.** Electronics Letters, V38(N4):155-157.

68. 2002 H. Jiang, J. McNary, H. W. K. Tom, M. Yan, H. B. Radousky, and S. G. Demos, **Nanosecond time-resolved multi-probe imaging of laser damage in transparent solids.** Applied Physics Letters 81, 3149.
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70. 2003 C.S. Liu, Qing Zhang, Nicholas Kioussis, S.G. Demos, H.B. Radousky, **Electronic Structure of Intrinsic and Extrinsic Hydrogen Point Defects in  $\text{KH}_2\text{PO}_4$ .** Physical Review B, 68, 4107.
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#### **INVITED REVIEWS, BOOKS, AND BOOK CHAPTERS:**

1. M. Ross and H. B. Radousky, "Physics of Simple Molecules at High Density," in **Simple Molecular Systems at High Pressure**, edited by A. Polian, P. Loubeyre and N. Boccara (Plenum, 1989), p. 47.
2. H.B. Radousky, "A Review of the Superconducting and Normal State Properties,  $Y_{1-x}Pr_xBa_2Cu_3O_7$ ," Journal of Materials Research 7, 1917 (1992).
3. H. B. Radousky "Magnetism in Pr Containing Cuprates," a chapter in **Magnetic Properties of Heavy Fermion Systems**, ed. H. B. Radousky, 345-368, (World Scientific Publishing, October, 2000).
4. H. B. Radousky (editor) **Magnetic Properties of Heavy Fermion Systems**, (World Scientific Publishing, October, 2000). This is Volume 11 in the series "Modern Condensed Matter Physics."  
(view cover at [www.llnl.gov:80/urp/people/HBR.html](http://www.llnl.gov:80/urp/people/HBR.html))
5. H. B. Radousky and S. G. Demos, "**Getting under the Skin – Deep**" LLNL Science and Technology Review, November, 2000. UCRL – 52000-00-11/12. ([www.llnl.gov/str/](http://www.llnl.gov/str/))

#### **SEMINARS AND INVITED TALKS**

1. "Magnetic Superconductors, A Study in Conflict and Compromise," invited talk given at LLNL, August 6, 1982.
2. "Temperature Measurements in Shock Compressed Materials," invited talk given at the ACS Meeting, Albuquerque, NM, June 6-8, 1984.
3. "High Pressure Positron Measurements of Fe in a Diamond Anvil Cell," invited talk given at Université de Geneve, Geneva, Switzerland, Sept. 9, 1984.
4. "Emission Spectroscopy of Shock Compressed Materials," invited talk given at the ACS Meeting, Chicago, IL, Sept. 8-13, 1985.
5. "Optical Emission Spectroscopy of Shocked Materials," invited talk given at the 1986 Gordon Conference on Research at High Pressures, Meriden, NH, June 23-27, 1986.

6. "Shock-Induced Cooling in Dense Fluids," invited talk given at the 1987 Shock Wave meeting, Monterey, CA, July 20-23, 1987.
7. "Shock-Induced Cooling in Dense Fluids," Solid State Physics Seminar given at the University of Illinois, Chicago Department of Physics on October 14, 1987.
8. "Shock Wave Studies of Dense Fluids," Solid State Physics Seminar given at the University of California, Davis Department of Physics of December 3, 1987.
9. "Shock-Induced Cooling in Dense Fluids," Colloquium given at the University of California, Davis Department of Applied Science on December 9, 1987.
10. "Phase Transitions at Ultra High Pressure," invited talk given at Emory University, Department of Physics, May 13, 1988.
11. "Preparation and Superconducting Properties of Single Phase  $Y_{1-x}Pr_xBa_2Cu_3O_7$ , invited talk given at the 7th DOE Informational Meeting on High  $T_c$  Superconductors, January 19, 1989.
12. "Flux Creep in High  $T_c$  Superconductors," Solid State Physics Seminar given at UC-Davis, Department of Physics, April 12, 1989.
13. "Modification of Superconducting Properties by Elemental Substitutions," Seminar at U. of Tokyo, November 7, 1989.
14. "Recent Results on  $Y_{1-x}Pr_xBa_2Cu_3O_7$  and Other Stories," invited talk given at Argonne National Laboratory on March 30, 1990.
15. "Superconducting Properties of High  $T_c$  Oxides," colloquium given at University of California, Davis, Department of Applied Science on April 3, 1990.
16. "High  $T_c$  Superconductivity," Invited lecture at the LLNL/UC-Davis Summer Institute in Applied Physics, August 13-24, 1990.
17. "Destruction of Superconductivity in  $Y_{1-x}Pr_xBa_2Cu_3O_7$ ," Colloquium given at University of Illinois, Chicago on April 3, 1991.
18. "High  $T_c$  Superconductivity, "Invited lecture at the LLNL/UC-Davis Summer Institute in Applied Physics, June 12, 1991.
19. "Destruction of Superconductivity in  $Y_{1-x}Pr_xBa_2Cu_3O_7$ ," Colloquium given at University of California, Davis, Applied Science Department on February 11, 1992.
20. "Destruction of Superconductivity in  $Y_{1-x}Pr_xBa_2Cu_3O_7$ ," Colloquium given at University of California, Davis, Department of Physics, on February 21, 1992.

21. "Introduction to High T<sub>c</sub> Superconductivity", invited speaker at Chabot College, Hayward, CA, June 1, 1992.
22. "Effects of f-electron hybridization in YPrBCO and related structures", Solid State Seminar, The Israeli Institute of Technology (Technion), December 29, 1992.
23. "Superconductivity and Magnetism in Three Related Structures, PrBCO, PrBCNO and PrCeSCNO", University of Illinois, Chicago, April 9, 1993.
24. "Introduction to High T<sub>c</sub> Superconductivity", invited speaker at Chabot College, Hayward, CA, May 20, 1993.
25. "Superconductivity and Magnetism in Three Related Structures, PrBCO, PrBCNO and PrCeSCNO", Northwestern University, June 24, 1993.
26. "Superconductivity and Magnetism in Three Related Structures, PrBCO, PrBCNO and PrCeSCNO", invited talk at the 2nd International Conference on f-elements, Helsinki, Finland, August, 1994.
27. "Introduction to High T<sub>c</sub> Superconductivity", colloquium speaker at the University of San Francisco, November 3, 1994.
28. "Introduction to High T<sub>c</sub> Superconductivity", colloquium speaker at the California State University, Hayward, January 20 1995.
29. "Femtosecond Spectroscopy in Biophysics", invited talk at the LLNL/UC-Davis Biotechnology Collaboration Forum, February 10, 1995.
30. "Superconducting and Magnetic Properties in RPrCeSCNO ", invited talk at the 8th International Conference on Superlattices, Microstructures and Microdevices Cincinnati, Ohio August 22, 1995
31. "Laser Induced Damage in Non-Linear Optical Crystals", colloquium speaker at Purdue University, March 6, 1998.
32. "Laser Induced Damage in KDP Crystals", colloquium speaker at California State University, Northridge, April 1, 1998.
33. "Research within the University/LLNL Institutes", invited speaker at the National Physical Science Consortium (NPSC) Annual Meeting, San Diego, Ca, May, 1998.
34. Hongbing Jiang, Harry W.K. Tom, Ming Yan, Harry Radousky, Jim DeYoreo, and Stavros Demos, "Time -resolved studies of laser damage processes in KDP crystals", *30th Annual symposium on optical materials for high power lasers*, Boulder, Colorado, October 4-7, 1999. Invited Talk.
35. "Deep Sub-Surface Imaging for Cancer Detection", UC-Davis Physics Department Student Seminar Series, Davis, Ca, May 23, 2000.

36. "Laser-induced Damage in KDP and other Examples of Research in the LLNL Institutes", University of Alaska, Fairbanks, May 3, 2001.
37. "Understanding Laser Damage in Optical Materials – A Journey From Materials Science To Plasma Physics, UC-Davis Physics Department Seminar, June 6, 2002.

## **CONTRIBUTED PAPERS**

1. 1980 G. S. Knapp, H. B. Radousky, and T. Klippert, "Heat Capacity Studies of (RE) Rh<sub>4</sub>B<sub>4</sub>," Bulletin of the American Physical Society 25:233.
2. 1981 H. B. Radousky, T. Jarlborg, G. S. Knapp and A. J. Freeman, "Assessment of Theoretical Determinations of Electron-Phonon Coupling Parameter, g in Metals and Intermetallic Compounds," Bulletin of the American Physical Society 26:211.
3. 1982 A. T. Aldred, H. B. Radousky, G. S. Knapp and J. S. Kouvel, "Superconducting and Magnetic Properties of Y<sub>0.9</sub>RE<sub>0.1</sub>Rh<sub>4</sub>B<sub>4</sub>," Bulletin of the American Physical Society 27:246.
4. 1982 H. B. Radousky, A. T. Aldred, G. S. Knapp and J. S. Kouvel, "Magnetic Interactions in Y<sub>1-x</sub>Er<sub>x</sub>Rh<sub>4</sub>B<sub>4</sub>," Bulletin of the American Physical Society 27:246.
5. 1983 H. B. Radousky, J. W. Downing, A. T. Aldred, G. S. Knapp and A. J. Freeman, "Magnetic Properties of HfZn<sub>2</sub>," Bulletin of the American Physical Society 28:249.
6. 1984 H. B. Radousky, A. C. Mitchell, and W. J. Nellis, "Shock Temperature of CsI," Bulletin of the American Physical Society 29:937.
7. 1985 W. J. Nellis, H. B. Radousky, W. C. Moss and A. C. Mitchell, "Dynamic High Pressure Processing of Materials to one Megabar," Bulletin of the American Physical Society 30:580.
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77. 2000 S.G. Demos, A. Burnham, M. Kozlowski, M. Staggs, H.B. Radousky, "Spectroscopic investigation of laser-induced material modifications", CLEO MAY 7-12, 2000, San Francisco, California.
78. 2000 S.G. Demos, V. Sankaran, M. Staggs, H.B. Radousky, "Imaging depth and spatial resolution using the SPDI technique", MB6, *Advances in Optical Imaging and Photon Migration, OSA Biomedical Topical Meetings*, Miami Beach, Florida, April 2-5.

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80. 2000 S.G. Demos, M. Staggs, H.B. Radousky, L. Chase, M. Kozlowski, "Mechanisms to Explain Damage Growth in Optical Materials," *XXXII Annual Symposium on Optical Materials for High-power Lasers*, C-4, Boulder, Colorado, October 16-18, 2000.
81. 2000 M.R. Kozlowski, M. Staggs, H.B. Radousky, "Micro-spectroscopy investigation of laser induced damage initiation and growth in optical materials," *Optical Society of America Annual Meeting*, Rhode Island Convention Center, Providence, Rhode Island, October 22-26, 2000.
82. 2001 C.W. Carr, H.B. Radousky, S.G. Demos, M. Staggs, "Laser-induced Reactions of Defect Nano-Clusters," *Bull. of the APS [N8.006] APS 2001*, Seattle, Washington, March 12-16, 2001.
83. 2001 H.B. Radousky, C.W. Carr, S.G. Demos, M. Stagg, "Plasma Formation During Laser-induced Damage in Optical Materials," *Bull. of the APS [Z14.007] APS 2001*, Seattle, Washington, March 12-16, 2001.
84. 2001 Qing Zhang, Nicholas Kioussis, Stavros Demos, Harry Radousky, "Ab initio study of the electronic structure and phase transition in KDP," *Bull. of the APS [W8.010] APS 2001*, Seattle, Washington, March 12-16, 2001.
85. 2004 A.E. Berkowitz, Jung-II Hong, H.B. Radousky, "Magnetostrictive Nanoparticles Produced by Spark Erosion," *Bull. of the APS [V23.009] APS 2004*, Montreal, Canada, March 20-24, 2004.
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88. 2004 Nersesse Nersessian, Vitalij Pecharsky, Harry Radousky, Gregory Carman "Large Power Generation in  $Gd_5Si_2Ge_2$  and Piezoelectric Laminates," *Bull. of the APS [J39.006] APS 2004*, Montreal, Canada, March 20-24, 2004.

## RECORDS OF INVENTION:

1. *Halogenated High T<sub>c</sub> Superconductors and Method of Preparation*, H. B. Radousky, R. S. Glass M. J. Fluss, LLNL File Number IL-8411.
2. *High Density Nano-Scale Josephson Junction Arrays*, H. B. Radousky and M. J. Bennahmias, LLNL File Number IL-9693.
2. *Energy Harvesting Using A Thermoelectric Material* N. Nersessian, H. B. Radousky and G. P. Carman, LLNL File Number IL-11328. Filed as a provisional patent March, 2004.

## SESSION CHAIR

- Session Chair for High Density Materials, 1987 Shockwave Meeting, Monterey, CA
- Session chair for Heavy Fermions, 1995 March APS Meeting, San Jose, CA.
- Session Chair for Semiconductors: Optical Properties and Spectroscopy of Structured Semiconductors 2000 March APS Meeting, Minneapolis, MN.

## RESEARCH/FUNDING PROJECTS - 1982-PRESENT:

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|-----------|--|
| 1982-1988 | Shock-Temperature Measurements of Simple Molecular Fluids to Megabar Pressures and 20,000 K. Position: Lead Physicist. Funding: DOE - Laboratory Programmatic Research.    |
| 1984-1985 | High Pressure Positron Annihilation Studies of Metals. Position: Project Leader. Funding: DOE - Laboratory Programmatic Research.  |
| 1986-1988 | Advanced Diagnostic Development of Axially Symmetric Magnetic Pressure Gauges. Position: Project Leader. Funding: DOE - Laboratory Programmatic Research.                  |
| 1988-1992 | LLNL Superconductivity Program. Position: Task Leader for Experiments. Funding: DOE - Laboratory Directed Research and Development.  |
| 1989-1991 | High Temperature Raman and Positron Annihilation Studies of Oxide Superconductors. Position - Project Leader. Funding: DOE - Laboratory Directed Research and Development. |
| 1990-1991 | High Pressure Magnetic Studies of Oxide Superconductors. Position: Co-PI. Funding: UC Institute of Geophysics and Planetary Physics.                                       |
| 1991-1994 | Materials Physics at Short Time Scales. Position - Project Leader. Funding: DOE - Laboratory Directed Research and Development.  |
| 1992-1993 | High Pressure Luminescence Studies of Semiconductors. Position: Co-PI. Funding: UC Institute of Geophysics and Planetary Physics.  |

- 1993-1995 Magnetic Impurity Studies of High T<sub>C</sub> Superconductors. Position: Co-PI. Funding: DOE - Historically Black Colleges and Universities (HBCU) Program.
- 1994-1996 Organic Light Emitting Diodes. Position: Co-PI. Funding: DOE - Laboratory Directed Research and Development.
- 1995-1996 New Resonance Technique for Measuring High Temperature Superconductors. Position: Co-PI. Funding: NSF.
- 1996-1999 Origins of laser damage in crystals of K(D<sub>x</sub>H<sub>1-x</sub>)<sub>2</sub>PO<sub>4</sub>. Position - PI for Institute of Laser Sciences and Applications (ILSA) Effort. Funding: LDRD ERI.
- 1997-1997 Time Resolved Spectroscopy for the Study of Heterocyclic Amine Carcinogen Interactions with DNA. Position: PI. Funding: LDRD ERD.
- 1997-2001 Center for Laser Imaging and Cancer Diagnostics Position: LLNL PI. Funding: DOE Direct, Office of Science
- 1999-2002 Plasma Dynamics in KDP. Position – co-PI. Funding: LDRD ERI ILSA/MRI.
- 1999-2002 Medical Imaging for Cancer Detection Position – Co-PI Funding: California Department of Health Services.
- 2002-2003 Damage Initiation and Growth – Position – Co-I Funding LLNL UCDRD
- 2002-2004 Medical Imaging for Cancer Detection Position – Co-PI Funding: California Department of Health Services.
- 2003-2004 Synthesis and Magnetostrictive Properties of Ferromagnetic Nanoparticles – Position – PI UCOP Campus Lab Exchange.
- 2002-2004 Exchange-Coupling in Magnetic Nanoparticles Composites to Enhance Magnetostrictive Properties Position – PI LDRD ERI

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