

Activity Report Publications

LISTING FOR 2007

FACILITY

2007

Cutler, J.N.; C. Christensen, T.G. Kotzer, T. Ogunremi, T. Pushparajah, J. Warner *The Canadian Light Source – A New Tool for Industrial Research*, Nuclear Instruments and Methods B, Vol. 261 pp. 859-862.

Cutler, J.N.; E. Hallin, M. Dalzell, M. de Jong, T. Ellis, W. Thomlinson. *Progress at Canada's National Synchrotron Facility: The Canadian Light Source*. Physics in Canada, Vol 63, No. 3. pp. 117-120.

Cutler, J.; E. Hallin, M. deJong, W. Thomlinson, T.H. Ellis *The Canadian Light Source: The Newest Synchrotron in the Americas*. Nuclear Instruments and Methods A, Vol. 582, pp. 11-13.

Yates, B.; D. Maxwell, S. Chen, B. Truax *The Canadian Light Source Optical Metrology Facility*. Nuclear Instruments and Methods A, Vol. 582, pp. 146-148.

Yates, B.; D. Maxwell *Canadian Light Source – Optical Metrology Facility*. Can. J. Chem., Vol. 85, pp. 685-689.

BEAMLINE DESIGN

2007

Asai, J.; R. Feng *Dose Rate Estimates Due to Gas Bremsstrahlung for a Photon Shutter and Collimator Unit of the VESPERs Beamline at the Canadian Light Source*. Radiation Measurements, Vol. 42, p.1674.

Feng, R.; A. Gerson, G. Ice, R. Reininger, B. Yates, S. McIntyre *VESPERs Beamline for Combined XRD and XRF Measurement*. AIP Conference Proceedings Vol. 879 pp. 872-874.

Jiang, D.T.; D. Shu, W. Sheng *Canadian Light Source Front End Development* AIP Conference Proceedings Vol. 879 pp. 1022-1025

Kaznacheyev, K.V.; C. Karunakaran, F. He, M. Sigrist, T. Summers, M. Obst, A.P. Hitchcock *CLS ID-10 Chicane Configuration: From "Simple Sharing" to Extended Performance with High-Speed Polarization Switching*. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 582, pp. 103-106.

Khruschev, S.V.; E.A. Kuper, V.H. Lev, N.A. Mezentsev, E.G. Miginsky, V.V. Repkov, V.A. Shkaruba, V.M. Syrovatin, V.M. Tsukanov *Superconducting 63-pole 2 T Wiggler for Canadian Light Source*. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 575, Issues 1-2, pp. 31-41.

Wysokinski, T.; D. Chapman, G. Adams, M. Renier, P. Suortti, W. Thomlinson *Beamlines at Biomedical Imaging and Therapy Facility at the Canadian Light Source - Part 1*. Nuclear Instruments and Methods A, Vol. 582, pp. 73-76.

Zhu, Y.; H. Zhang, R. McCrea, B. Bewer, S. Wiebe, H. Nichol, C. Ryan, T. Wysokinski, D. Chapman *Fabrication of a Small Animal Restraint for Synchrotron Biomedical Imaging Using a Rapid Prototyper*. Nuclear Instruments and Methods in Physics Research Section A: Vol. 582, pp. 229-232.

01B1-1(Mid IR)

Refereed Journals

2007

Michaelian, K.H. *Linearization and Signal Recovery in Photoacoustic Infrared Spectroscopy* Rev. Sci. Instrum. Vol. 78 pp. 051301.

May, T.; T.H. Ellis, R. Reininger *Mid-infrared Spectromicroscopy Beamline at the Canadian Light Source*. Nuclear Instruments and Methods A, Vol. 582, pp. 111.

Conference Proceedings

2007

May, T.; D. Appadoo, T. Ellis, R. Reininger *Infrared Beamlines at the Canadian Light Source*. AIP Conference Proceedings Vol. 879 pp. 579-582.

02B1-1(Far IR)

Refereed Journals

2007

McKellar, A.R.W.; D.W. Tokaryk, D.R.T. Appadoo *The Far-Infrared Spectrum of Acrolein, CH₂CHCHO: the ν_{18} Fundamental and ($\nu_{17} + \nu_{18}$) - ν_{18} Hot Bands*. J. Mol. Spectrosc. Vol. 244 pp. 146-152.

McKellar, A.R.W.; D.W. Tokaryk, L.-H. Xu, D. Appadoo, T. May *High Resolution Analysis of the ν_{12} and ν_{17} Fundamental Bands of Acrolein, CH₂CHCHO, in the 600 cm⁻¹ Region*. J. Mol. Spectrosc. Vol. 242 pp. 31-38.

Conference Proceedings

2007

May, T.; D. Appadoo, T. Ellis, R. Reininger *Infrared Beamlines at the Canadian Light Source*. AIP Conference Proceedings Vol. 879 pp. 579-582.

Pirali, O.; G. Mulas, G. Mallocci, M. Vervloet, D.W. Tokaryk, J. Oomens, C. Joblin *High Resolution Spectroscopy of Naphthalene and Quinoline. Anharmonicity of the CH out-of-plane Modes*. Conference Proceedings "Molecules in Space and Laboratory", http://www.u-cergy.fr/Mol_Spa_Lab/.

06ID-1(HXMA)

Refereed Journals

2007

Liu, T.; A. Ramesh, Z. Ma, S.K. Ward, L. Zhang, G.N. George, A.M. Talaat, J.C. Sacchettini, D.P. Giedrocm *CsoR is a Novel Mycobacterium Tuberculosis Copper-Sensing Transcriptional Regulator*. Nature Chemical Biology Vol. 3 pp. 60-68.

Smith, J.S.; S. Desgreniers, J.S. Tse, D.D. Klug *High-pressure Phase Transition Observed in Barium Hydride*. Journal of Applied Physics Vol. 102 pp. 043520-1-043520-8.

Tse, J.S.; D.D. Klug, S. Desgreniers, J. Smith, R. Flaccu, Z. Liu, J. Hu, N. Chen, D.T. Jiang. *Structural Phase Transition in CaH₂ at High Pressures*. Phys. Rev. B. Vol. 75 pp. 134108-1 to 134108-5.

Conference Proceedings

2007

Chen, N.; D.T. Jiang, J. Cutler, G.P. Demopoulos, J.W. Rowson *XAFS of Synthetic Iron(III)-Arsenate Co-Precipitates and Uranium Mill Neutralized Raffinate Solids*. AIP Proceedings for XAFS13 Vol. 882 pp. 244.

Jiang, D.T.; N. Chen, L. Zhang, K. Malgorzata, G. Wright, R. Igarashi, D. Beauregard, M. Kirkham, M. McKibben *XAFS at Canadian Light Source*. AIP Conference Proceedings Vol. 882 pp. 893-895.

Jiang, D.T.; N. Chen, W. Sheng *Wiggler-Base Hard X-ray Spectroscopy Beamline at CLS*. AIP Conference Proceedings Vol. 879 pp. 800-803.

08ID-1(CMCF)

Refereed Journals 2007

Duffy, A.; M. Fodje, R. Berg, P. Grochulski, *Canadian Macromolecular Crystallography Facility (CMCF) 08ID-1 Status Update*. Nuclear Instruments and Methods A, Vol. 582, pp. 82.

Grochulski, P.; *Are the Bending Magnet Beamlines Appropriate for Protein Crystallographers?* Synchrotron Radiation in Natural Science Vol. 6, p. 1.

Grochulski, P.; M. Fodje, L. Delbaere *CMCF 08ID-1 Beamline at the Canadian Light Source*. Acta Cryst. A63, p.245.

Mizuno, Y.; G.B.G. Moorhead, K.K.-S. Ng *Structural Basis for the Regulation of N-acetylglutamate Kinase by PII in Arabidopsis thaliana*. J. Biol. Chem. Vol. 282, p. 35733.

Puttick, J.; C. Vieille, S.H. Song, M.N. Fodje, P. Grochulski, L.T.J. Delbaere *Crystallization, Preliminary X-ray Diffraction and Structure Analysis of Thermotoga maritima Mannitol Dehydrogenase*. Acta Cryst. Vol. F63 pp. 350-352.

10ID-1(SM)

Thesis MSc. 2007

Greiner, M.T., *Investigation of Corrosion Inhibiting Aniline Oligomer Films on Iron Using Photoelectron Spectroscopy*. McMaster University, Canada.

Refereed Journals 2007

Kaznatcheev, K.V.; P. Dudin, A.P. Hitchcock, O.D. Lavrentovich *An X-ray Microscopy Study of Chromonic Liquid Crystal Texture*. Phys. Rev. E. Vol. 76, p. 061703.

Kaznatcheev, K.V.; C. Karunakaran, U.D. Lanke, S.G. Urquhart, M. Obst, A.P. Hitchcock *Soft X-ray Spectromicroscopy Beamline at the CLS: Commissioning Results*. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 582, pp. 96-99.

11ID-1(SGM)

Refereed Journals 2007

Armelaio, L.; F. Heigl, A. Jurgensen, R.I.R. Blyth, T. Regier, X.-T. Zhou, T.K. Sham *An Optical-Structural Property Correlation Study of ZnO and Eu-Doped ZnO Nanostructures*. J. Phys. Chem. C. Vol. 111 pp. 10194.

Cabaret, D.; F. Mauri, G.S. Henderson *Oxygen K-edge XANES of Germanates Investigated Using First Principles Calculations*. Phys. Rev. B Vol. 75 pp. 184205.

Grosvenor, A.P., R.G. Cavell, A. Mar *Next Nearest Neighbour Contributions to $P 2p^{3/2}$ X-ray Photoelectron Binding Energy Shifts of Mixed Transition Metal Phosphides $M1-xM'xP$ with the MnP -type Structure*. J. Solid State Chem. Vol. 180, pp. 2702.

Grosvenor, A.P.; R.G. Cavell, A. Mar, R.I.R. Blyth *Electronic Structure of $Hf(Si_{1-x}As_x)_{1-x}$ As ($0.5 < x < 0.7$) by X-ray Photoelectron and Photoemission Spectroscopy*. J. Solid State Chem. Vol. 180, pp. 2670.

Hardie, A.G.; J.J. Dynes, L.M. Kozak, P.M. Huang *Influence of Polyphenols on the Integrated Polyphenol-Maillard Reaction Humification Pathway as Catalyzed by Birmessit*. Annals of Environmental Science, Vol. 1, p. 91.

Henderson, G.S. *The Germanate Anomaly: What do we know?* J Non-crystalline Solids Vol. 353 pp. 1695-1704

Henderson, G.S.; D.R. Neuville, L. Cormier *An O K-Edge XANES Study of Calcium Aluminates*. Can. J. Chem. Vol. 85 pp. 801.

Ko, J.Y.P.; F. Heigl, Y.M. Yiu, X.T. Zhou, T. Regier, R.I.R. Blyth, T.K. Sham *Soft X-ray Excited Colour Centre Luminescence and XANES Studies of Calcium Oxide*. Can. J. Chem. Vol. 85 pp. 853.

Leinweber, P.; J. Kruse, F.L. Walley, A. Gillespie, R.I.R. Blyth, T. Regier *N K-edge XANES – An Overview of Reference Compounds Used to Identify “unknown” Organic Nitrogen in Environmental Samples*. J. Synch. Rad., Vol. 14, pp. 500.

Pereira, G.; A. Lachenwitzer, M. Kasrai, G.M. Bancroft, P.R. Norton, M. Abrecht, P. Gilbert, T. Regier, R. Blyth, J. Thompson *A Chemical and Mechanical Analysis of Tribofilms from Fully Formulated Oils: Effects on 52100 Steel*. Tribology Materials, Surfaces & Interfaces Vol. 1, p. 48.

Pereira, G.; A. Lachenwitzer, Y. Li, M. Kasrai, G.M. Bancroft, P.R. Norton, M. Abrecht, P. Gilbert, T. Regier, Y.F. Hu, L. Zuin *A Chemical and Mechanical Analysis of Tribofilms from Fully Formulated Oils: Films on an Al-Si Alloy (A383)*. Tribology Materials, Surfaces & Interfaces Vol. 1, p. 105.

Regier, T.; J. Krochak, T.K. Sham, Y-F Hu, J. Thompson, R.I.R. Blyth *Performance and Capabilities of the Canadian Dragon: The SGM Beamline at the Canadian Light Source*. Nucl. Instr. Meth. A. Vol. 582, pp. 93.

Sham, T.K.; R.A. Rosenbeerg *X-ray Excited Optical Luminescence: Understanding the Light Emission Properties of Silicon Based Nanostructures*, review article in: Chemical Physics Physical Chemistry Vol. 8, p. 2557.

Sunduramurthy, V.; A.K. Dalai, J. Agjaye *Effect of Phosphorus Addition on the Hydrotreating Activity of NiMo/A1203 Carbide Catalyst*. Catalysis Today Vol. 125 pp. 239.

Yang, Q.; S.L. Yang, Y.S. Li, A. Hirose *NEXAFS Characterization of Nanocrystalline Diamond Thin Films Synthesized with High Methane Concentrations*. Diamond and Related Materials. Vol. 16 pp. 730.

Yang, S.; Q. Yang, Z. Sun *Synthesis and Characterization of Nanocrystalline Diamond Thin Film on Ti_3SiC_2* . Nanotechnology Vol. 18 pp. 065703.

Zhou, X.T.; F. Heigl, J.W.P. Ko, M.W. Murphy, J.G. Zhou, T. Regier, R.I.R. Blyth, T.K. Sham *Origin of Luminescence from Ga_2O_3 Nanostructures Using X-ray Absorption and Luminescence Spectroscopies*. Phys. Rev. B Vol. 75 pp. 125303.

Zhou, X.T.; T.K. Sham, Y. Wu, Y.-M. Chong, I. Bello, S.-T. Lee, F. Heigl, T. Regier, R.I.R. Blyth *X-ray Excited Optical Luminescence from Diamond Thin Films: The Contribution of sp^2 - and H-bonded Carbon to the Luminescence*. J. Am. Chem. Soc. (communication), Vol. 129 pp. 1476.

Conference Proceedings 2007

Heigl, F.; A. Jurgensen, X.-T. Zhou, M. Murphy, J.Y.P. Ko, S. Lam, T.K. Sham, T. Regier, R.I.R. Blyth, I. Coulthard, L. Zuin, Y.-F. Hu, L. Armelaio, R. Gordon, D. Brew *Time Resolved Studies of ZnO (Eu) Nanostructure Luminescence Using Short Synchrotron Radiation Pulses*. AIP Conference Proceedings Vol. 882 pp. 864.

Heigl, F.; A. Jurgensen, X.-T. Zhou, M. Murphy, J.Y.P. Ko, T.K. Sham, R. Rosenberg, R. Gordon, D. Brew, T. Regier, L. Armelaio *Dynamic View on Nanostructures: A Technique for Time-resolved Optical Luminescence Using Light Pulses at SRC, APS and CLS*. AIP Conference Proceedings Vol. 879 pp.1202.

Ko, J.Y.P.; X.T. Zhou, F. Heigl, T. Regier, R.I.R. Blyth, T.K. Sham *NEXAFS of $Ca^{2+} L_{3,2}$ Edges of Various Calcium Compounds and XEOL Studies of Luminescent Calcium Compounds*. AIP Conference Proceedings Vol. 882 pp. 538.

Lam, S.; F. Heigl, P.-S.G. Kim, T.K. Sham, R. Gordon, D. Brewster, T. Regier, I. Coulthard, R.I.R. Blyth *X-ray Excited Optical Luminescence from Ru(bipy)₃²⁺ and Ru(phen)₃²⁺ in the Energy and Time Domain*. AIP Conference Proceedings Vol. 882 pp. 687.

Murphy, M.W.; X.T. Zhou, F. Heigl, T. Regier, T.K. Sham *An X-ray Excited Optical Luminescence (XEOL) Analysis Mn²⁺ Doped ZnS Nanostructures*. AIP Conference Proceedings Vol. 882 pp. pp. 764.

Regier, T.; J. Paulsen, G. Wright, I. Coulthard, K. Tan, T.K. Sham, R.I.R. Blyth *Commissioning of the Spherical Grating Monochromator (SGM) Soft X-ray Spectroscopy Beamline at the Canadian Light Source*. AIP Conference Proceedings Vol. 879 pp. 473-476.

Zhou, X.T.; F. Heigl, M.W. Murphy, T. Regier, I. Coulthard, R.I.R. Blyth, T.K. Sham *Origin of the Luminescence from SnO₂ Nanoribbons*. AIP Conference Proceedings Vol. 882 pp. 777.

11ID-2(PGM) Thesis MSc 2007

Greiner, M.T.; *Investigation of Corrosion Inhibiting Aniline Oligomer Films on Iron Using Photoelectron Spectroscopy*. McMaster University, Canada.

Thesis PhD 2007

Weigel, C.; *Structure des Verres Dans le Systeme NaFeSi206-NaAlSi206. Comportement Structural du fer*. Université Pierre et Marie Curie (Paris VI) France.

Refereed Journals 2007

Hu, Y.F.; L. Zuin, G. Wright, R. Igarashi, M. McKibben, T. Wilson, S.Y. Chen, T. Johnson, D. Maxwell, B.W. Yates, T.K. Sham, R. Reininger *Commissioning and Performance of the Variable Line Spacing Plane. Grating Monochromator Beamline at the Canadian Light Source* Review of Scientific Instruments Vol. 78, No. 8 pp. 083109-1 to 083109-5.

Hu, Y.F.; L. Zuin, R. Puttner *High-resolution Gas Phase P L-edge Photoabsorption Spectra of PF₅*. Can. J. Chem./Rev. Can. Chim. V ol. 85(10) pp. 1-5.

Pereira, G.; A. Lachenwitzer, Y. Li, M. Kasrai, G.M. Bancroft, P.R. Norton, M. Abrecht, P. Gilbert, T. Regier, Y.F. Hu, L. Zuin *A Chemical and Mechanical Analysis of Tribofilms from Fully Formulated Oils: Films on an Al-Si Alloy (A383)*. Tribology Materials, Surfaces & Interfaces Vol. 1, p. 105.

Pratt, A.; L. Zuin, Y.M. Yiu, S. Harmer *High-Resolution XANES S L_{3,2} Edge Spectra Collected from a Series of Iron-Bearing Sphalerite(Zn,Fe)S Minerals*. Canadian Journal of Chemistry Vol. 85 pp. 1-6.

Xu, D.; D. Peak *Adsorption of Boric Acid on Pure and Humic Acid Coated am-Al(OH)₃: A Boron K-Edge XANES Study*. Environmental Science & Technology Vol. 41(3) pp. 903-908.

Conference Proceedings 2007

Heigl, F.; A. Jurgensen, X.-T. Zhou, M. Murphy, J.Y.P. Ko, S. Lam, T.K. Sham, T. Regier, R.I.R. Blyth, I. Coulthard, L. Zuin, Y.-F. Hu, L. Armelao, R. Gordon, D. Brewster *Time Resolved Studies of ZnO (Eu) Nanostructure Luminescence Using Short Synchrotron Radiation Pulses*. AIP Conference Proceedings Vol. 882 pp. 864.

Hu, Y.F.; L. Zuin, R. Reininger, T.K. Sham *VLS-PGM Beamline at the Canadian Light Source*. AIP Conference Proceedings Vol. 879 pp. 535-538.

Non-Refereed Journals 2007

Pratt, A.R.; T. Negeri, G. Deschênes, *Analytical Surface Chemistry in Mineral Processing and Hydrometallurgy*. The Canadian Mineral Processors 39th Annual Meeting, Proceedings 2007, Vol. A85, pp. 591-605.