Maher Salloum

EXPERTISE

Data Analytics and Compression, High Performance Computing, Resilient Computing, Compressed Sensing, Wavelets, Time Series Forecasting, Optimization, Uncertainty Quantification, Thermal and Fluid Sciences, Mathematical Modeling and simulation, Porous media, Multiscale Transport Phenomena, Inverse Problems, Bioheat and Mass Transfer.

PROFESSIONAL EXPERIENCE

Senior Member of Technical Staff 2010 - present

Scalable and Secure Systems Research, ***Sandia National Laboratories,*** **Livermore, CA**

- Leads a research project entitled: "*In Situ Compressed Sampling and Reconstruction of Exascale Unstructured Mesh Datasets*" (LDRD, FY15 – FY17)
  - Data compression of HPC data using compressed sensing and wavelets
  - Forecasting of simulation data using ARMA models
  - Physical contraints error models
- Develops algorithms and stencils for fault-tolerant computing and integrates them in Trilinos and other DOE libraries.
- Develops models chemical engineering models of additively manufactured geometries.
- Developed models of hydrogen isotope exchange in palladium hydride beds.
- Wrote uncertainty quantification libraries for climate modeling codes.
- Developed new capabilities and interfaces for a LII (Laser Induced Incandescence) software package.
- Performed thermal analysis and found solutions for overheating problems in an aerogel reinforced data acquisition electronics box.
- Developed models of a flow sensor controlled by vortex-induced thermal gradients.
- Developed particle and continuum model of uranium hydride decomposition with quantified uncertainty.
- Performed software development on Trilinos (trilinos.sandia.gov): wrote test cases for C-Trilinos and Fortran Trilinos.
- Developed methods to infer constitutive models that account for uncertainty from molecular dynamics simulations data.
- Developed a coupled thermo-chemo-hydro-mechanical model of oxidation and decomposition in a uranium hydride bed.
- Performed multiscale uncertainty quantification studies in multiphysics simulations.

Postdoctoral Fellow 2009

Department of Mechanical Engineering, ***Johns Hopkins University***

- Developed reduced models of formation reactions in layered materials.
- Performed numerical simulations of flame propagation in reactive nanolaminates.
- Performed analysis and reduction of complex networks under uncertainty.
- Performed numerical simulation of propagation and mass transport in internal gravity waves.

Heat Transfer ENME 321 Instructor 2007

Department of Mechanical Engineering, ***UMBC***

Research Assistant 2005 - 2008

Bio-heat Transfer lab*, Department of Mechanical Engineering*, ***UMBC***

- Performed optimization calculations of the heat distribution in tumors and tissue during magnetic nanoparticle hyperthermia.
- Developed a Fortran code and performed computer simulations of nanoparticles deposition using the Discrete Element Method (DEM).
- Assisted in the computer simulation (COMSOL) of the temperature elevation in dentin during laser treatment.
- Performed computer simulations (COMSOL/Matlab) of the temperature distribution during laser photocoagulation of the feeder vessels in the eye.

Thermal Comfort lab, *Department of Mechanical Engineering, **AUB*** 2003 - 2005

- Developed a Fortran code and performed simulations of the transient temperature distribution in the human body under different environments and body activities.
- Performed experiments to measure the skin temperatures in a human subject in an asymmetric radiant environment.

Teaching Assistant 2005 - 2008

Department of Mechanical Engineering, ***UMBC,*** Thermo/fluids lab, Thermodynamics

- Assisted undergraduate students in the thermo/fluids lab course. Graded lab reports.
- Lead discussion sessions in the thermodynamics course and graded homework.

*Department of Mechanical Engineering, **AUB,*** Heat Transfer, HVAC 2003 - 2005

- Conducted problems solving sessions in Heat Transfer and HVAC courses and graded homework.
- Assisted undergraduate students in the thermo/fluids lab course. Graded lab reports.

Trainee – Summer Internship

*Research and development department, **Sakr Power Systems,** SAL, Halat, Lebanon* Summer 2002

- Introduced the company to the CAD software Pro/Engineer.
- Designed a telescopic lighting mast: three sliding parts of the mast, designing the cable/pulley system that has to open the 2 sliding parts. Design and selection of the hydraulic system.
- Performed a vibration study of a 2000 kVA engine-generator body and analysis of its anti-vibration mountings.

Trainee – Summer Internship

*Preventive maintenance department , **Cimenterie Nationale,** Chekka, Lebanon* Summer 2001

- Introduced the company to the CAD software Pro/Engineer.
- Designed a telescopic lighting mast: three sliding parts of the mast, designing the cable/pulley system that has to open the 2 sliding parts. Design and selection of the hydraulic system.
- Performed a vibration study of a 2000 kVA engine-generator body and analysis of its anti-vibration mountings.

COMPUTER SKILLS

Programming languages: *C++, C, Fortran, Matlab, Unix scripting.*
Software: *Matlab/Simulink, Comsol Multiphysics, Latex, Pro Engineer, Fluent, AutoCAD*
Operating Systems: *Unix.*
Open Source Code Development:
Karma4 (coming soon)
SWinzip 1.0 (http://www.sandia.gov/~mnsallo/SWinzip/swinzip-v1.0.tgz)
ForQint (http://www.sandia.gov/~mnsallo/ForQint/ForQint_v1.0.tgz)
Trilinos (trilinos.sandia.gov)

UQtoolkit (www.sandia.gov/UQToolkit/)

EDUCATION

University of Maryland, Baltimore County (UMBC), USA — Sept. 2005 – Dec. 2008
Ph.D, Mechanical Engineering (Thermo-Fluid sciences)
GPA: 4.0/4.0
Dissertation Title: Experimental and Theoretical Investigations of the Specific Absorption Rate and Temperature Elevation during Magnetic Nanoparticle Hyperthermia.
Research Focus: Bioheat and Biomass Transfer Modeling, Thermal Biology, Drug Delivery, Magnetic Nanoparticles, Treatment Optimization.
Relevant coursework: Continuum Mechanics, Heat Transfer in Biological Tissues, Multiscale Transport Phenomena, Finite Element Methods, Introduction to Parallel Computing

American University of Beirut (AUB), Lebanon — Oct. 2003 – June 2005
Masters of Science, Mechanical Engineering (Thermo-Fluid sciences)
GPA: 3.8/4.0
Thesis Title: A New Transient Bio-Heat Model of the Human Body and its Integration to Clothing Models.
Research Focus: Thermo-Fluid Sciences, Thermal Comfort, Building Thermal Design, Optimization
Relevant Coursework: Advanced Dynamics, Micro-flows Fundamentals, Elasticity and Plasticity, Computational Fluid Dynamics, Biomaterials, Advanced Heat Transfer, Advanced Thermodynamics.

Lebanese University, Roumieh, Lebanon — Oct. 1998 – June 2003
Bachelor of Engineering, Mechanical Engineering
GPA: *3.6/4.0*
Final year project: *Development and Evaluation of Hermite Type Finite Elements for Modeling Two-Dimensional Thermal Systems.*
Advisor: *Dr. Khalil El-Khoury*
Relevant Coursework: *Finite Element Method, Automotive Engineering, Plumbing, Acoustics, Energy Production, Vibrations, Internal Combustion Engines, Mechanical Design, Design of Mechanisms, Heat Transfer*

Collège des Soeurs des Saints Coeurs, Jbeil, Lebanon — June. 1996 – June 1998
Baccalauréat (Elementary Mathematics)

JOURNAL PUBLICATIONS

J.30 **Salloum, M.,** Bishop, J.E., Johnson, K. and van Bloemen Waander, B.G. "Wavelet Compression of Large Additive Manufacturing Experimental and Simulation Data" *Journal of Additive Manufacturing*. (in preparation)

J.29 Khalil, M., Lee, J. and **Salloum, M.** "Forecasting Wavelet Coefficients using ARMA Models" *International Journal of Computational Science and Engineering*. (in preparation)

J.28 **Salloum, M.** and Robinson, D. "A Numerical Model of Chemically Reacting Flow through Additively Manufactured 3D Structures" *AiChe Journal*. (in preparation)

J.27. **Salloum, M.**, Fabian, N.D., Hensinger, D.M., Lee, J., Allendorf, E.M., Bhagatwala, A., Blaylock, M.L., Chen, J.H., Templeton, J.A. and Tezaur, I. "Optimal Compressed Sensing and Reconstruction of Unstructured Mesh Datasets" *Data Science and Engineering*. (revised manuscript in review).

J.26. Alexanderian, A., Zhu, L., **Salloum, M.** Ma, R.H. and Yu, M. "Investigation of Biotransport in a Tumor with Uncertain Material Properties using a non-Intrusive Spectral Uncertainty Quantification Method" *ASME Journal of Biomechanical Engineering,* (in press).

J.25. **Salloum, M.**, Sargsyan, K., B., Jones, R., Najm, H.N., Debusschere. "Quantifying Sampling Noise and Parametric Uncertainty in Atomistic-to-Continuum Simulations using Surrogate Models" *SIAM Multiscale Modeling and Simulation,* Volume 13, Issue 3, 2015, Pages 953-976.

J.24. Bennett, J.C., Bhagatwala A., Chen, J.H., Commandur, S., Pinar, A., **Salloum, M.,** Thompson, D., "Trigger detection for adaptive scientific workflows using percentile sampling", *SIAM Journal on Scientific Computing,* (in press)

J.23. Chowdhary, K., **Salloum, M.,** Debusschere, B., Larson, V. "Applying Quadrature Methods for the Calculation of Subgrid Microphysics Statistical Moments", *Monthly Weather Review,* Volume 143, Issue 7, July 2015, Pages 2955-2972.

J.22. **Salloum, M.**, Gharagozloo, P.E. "Empirical and Physics-based Models of Uranium Hydride Decomposition Kinetics with Quantified Uncertainties", *Chemical Engineering Science,* Volume 116, April 2014, Pages 452-464.

J.21. **Salloum, M.**, James, S.C., Robinson, D. "Isotope exchange kinetics in metal hydrides: Effects of surface thermodynamics on exchange kinetics", *Chemical Engineering Science,* Volume 122, January 2015, Pages 474-490.

J.20. **Salloum, M.**, Templeton, J. "Inference and Uncertainty Propagation of Atomistically-Informed Continuum Constitutive Laws, Part 1: Bayesian Inference of Fixed Model Forms", *International Journal of Uncertainty Quantification,* Volume 4, Issue 2, April 2014, Pages 151-170,

J.19. **Salloum, M.**, Templeton, J. "Inference and Uncertainty Propagation of Atomistically-Informed Continuum Constitutive Laws, Part 2: Generalized Continuum Models based on Gaussian Processes" *International Journal of Uncertainty Quantification*, Volume 4, Issue , April 2014, Pages 171-184.

J.18. Kanouff, M.P., Gharagozloo, P.E., **Salloum, M**., Shugard, A.D. "A Multiphysics Numerical Model of Oxidation and Decomposition in a Uranium Hydride Bed" *Chemical Engineering Science,* Volume 91, 22 March 2013, Pages 212–225.

J.17. **Salloum, M.**, Sargsyan, K., Najm, H.N., Debusschere, B., Jones, R., Adalsteinsson, H. "A Stochastic Multiscale Coupling Scheme to account for Sampling Noise in Atomistic-to-Continuum Simulations" *SIAM Multiscale Modeling and Simulation,* Volume 10, May 2012, Pages 550-584.

J.16. Rizzi, F., Najm, H.N., Debusschere, B., Sargsyan, K., **Salloum, M.**, Adalsteinsson, H., O.M. Knio. "Uncertainty Quantification in MD Simulations. Part I: Forward Propagation" *SIAM Multiscale Modeling and Simulation,* Volume 10, December 2012, Pages 1428-1459.

J.15. Rizzi, F., Najm, H.N., Debusschere, B., Sargsyan, K., **Salloum, M.**, Adalsteinsson, H., O.M. Knio. "Uncertainty Quantification in MD Simulations. Part II: Bayesian Inference of Force-Field Parameters" *SIAM Multiscale Modeling and Simulation,* Volume 10, December 2012, Pages 1460-1492.

J.14. **Salloum, M.**, Alexanderian, A., Le Maître, O.P., Najm, H., Knio. O.M. "Simplified CSP analysis of a Stiff Stochastic ODE System" *Computer Methods in Applied Mechanics and Engineering,* Volumes 217-220, April 2012, Pages 121-138.

J.13. **Salloum, M.**, Knio. O.M., Brandt, A. "Numerical Simulation of Mass Transport in Internal Solitary Waves" *Physics of Fluids,* Volume 24, January 2012, DOI: 10.1063/1.367677.

J.12. Rizzi, F., **Salloum, M.**, Marzouk, Y., Xu, R.G., Falk, M., Weihs, T.P., Fritz, G., Knio, O.M. "Bayesian inference of atomic diffusivity in a binary Ni/Al system based on molecular dynamics" *SIAM Multiscale Modeling and Simulation*, Volume 9, March 2011, Pages 486-512.

J.11. **Salloum, M.**, Knio. O.M. "Simulation of Reactive Nanolaminates using Reduced Models. III. Ingredients for a General Multidimensional Formulation" *Combustion and Flame,* Volume 157, June 2010, Pages 1154-1166.

J.10. **Salloum, M.**, Knio. O.M. "Simulation of Reactive Nanolaminates using Reduced Models. II. Normal Propagation" *Combustion and Flame,* Volume 157, January 2010, Pages 436-445.

J.9. **Salloum, M.**, Knio. O.M. "Simulation of Reactive Nanolaminates using Reduced Models. I. Basic Formulation" *Combustion and Flame*, Volume 157, January 2010, Pages 288-195./

J.8. Su, D., Ma, R.H., **Salloum, M.**, Zhu, L. "Multi-scale Study of Nanoparticles Transport and Deposition in Tissues during an Injection Process" *Medical and Biological Engineering and Computing,* Volume 48, Issue 9, May 2010, Pages 853-863.

J.7. Zhu, L., Tolba, M., Arola, D., **Salloum, M.** and Meza, F. "Evaluation of Effectiveness of Er,Cr:YSGG Laser for Root Canal Disinfection: Theoretical Simulation of Temperature Elevations in Root Dentin" *ASME Journal of Biomechanical Engineering,* Volume 131, Issue 7, July 2009.

J.6. **Salloum, M.**, Ma, R.H., Zhu, L. "Enhancement in the Treatment Planning for Magnetic Nanoparticle Hyperthermia: Optimization of the Heat Absorption Pattern" *International Journal of Hyperthermia,* Volume 25, Issue 4, June 2009, Pages 309-321.

J.5. **Salloum, M.**, Ma, R.H., Zhu, L. "An in-vivo Experimental Study of Temperature Elevations in Animal Tissue during Magnetic Nanoparticle Hyperthermia" *International Journal of Hyperthermia*. Volume 24, Issue 7, November 2008, Pages 589-601.

J.4. **Salloum, M.**, Ma, R.H., Weeks, D, Zhu, L. "Controlling Nanoparticle Delivery in Hyperthermia for Cancer Treatment: Experimental Study in Agarose Gel" *International Journal of Hyperthermia,* Volume 24, Issue 4, June 2008, Pages 337-345.

J.3. Zhu, L., Banerjee, R.K., **Salloum, M.**, Bachmann, A., Flower W.R. "Temperature Distribution during ICG Dye-Enhanced Laser Photocoagulation of Feeder Vessels in Treatment of AMD-Related Choroidal Neovascularization" *Journal of Biomechanical Engineering*. Volume 130, Issue 3, June 2008.

J.2. Ghali, K., Ghaddar N., **Salloum, M.** "Effect of Stove Asymmetric Radiation Field on Thermal Comfort using a Multisegmented Bioheat Model" *Building and Environment*, Volume 43, Issue 7, July 2008, Pages 1241-1249.

J.1. **Salloum, M.**, Ghaddar, N., Ghali, K. "A New Transient Bio-Heat Model of the Body and its Integration to Clothing Models" *International Journal of Thermal Sciences*, Volume 46, Issue 4, April 2007, Pages 371-384.

CONFERENCES AND WORKSHOPS

C.29. Khalil, M., Lee, J. and **Salloum M.** "Predictive Modeling of Wavelet Coefficients for Physical Processes." *14th US National Congress on Computational Mechanics*, Montreal, Canada, July 17-20, 2017.

C.28. **Salloum, M.** and Robinson, D. "A Numerical Model of Chemically Reacting Flow through Additively Manufactured 3D Structures" *2016 AIChE Annual Meeting*, San Francisco, CA, November 13-18, 2013. ***(best paper award)***

C.27. **Salloum, M.**, Fabian, N.D., Hensinger, D.M., Lee, J., Templeton, J.A., E.M. Allendorf. "Compressed Sensing and Reconstruction of Unstructured Mesh Datasets" *AAAS Pacific Division annual Meeting*. June 14-17, San Diego, CA, USA.

C.26. **Salloum, M.,** Mayo, J.R., Armstrong, R.C. "In-Situ Mitigation of Silent Data Corruption in PDE Solvers" ISAV 2015: *ACM Workshop on Fault-Tolerance for HPC at Extreme Scale*, May 31-June 4 2016, Kyoto, Japan. **(Peer reviewed paper)**

C.25. **Salloum, M.**, Fabian, N.D., Hensinger, D.M., Lee, J., Templeton, J.A., E.M. Allendorf. "Compressed Sensing and Reconstruction of Unstructured Mesh Datasets: Optimal Compression" *SIAM Imaging Sciences 2016*. May 23-26, Albuquerque, NM.

C.24. Fabian, N.D., Lee, J., Hensinger, D.M., **Salloum, M.** " Compressed Sensing and Reconstruction of Unstructured Mesh Datasets: Performance and Accuracy " *SIAM Imaging Sciences* , May 22-26 2016, Albuquerque, NM.

C.23. **Salloum, M.,** Bennett, J.C., Pinar, A., Bhagatwala A., Chen, J.H. "Enabling adaptive scientific workflows via trigger detection" ISAV 2015: *In Situ Infrastructures for Enabling Extreme-scale Analysis and Visualization*, November 16 2015, Austin TX. **(Peer reviewed paper)**

C.22. **Salloum, M.**, James, S.C., Robinson, D. "Modeling Hydrogen Transport Into Palladium Hydride With Detailed Surface Reaction Chemistry" *2013 AIChE Annual Meeting*, San Francisco, CA, November 3-8, 2013.

C.21. **Salloum, M.**, Templeton, J. "Continuum Nanoscale Constitutive Laws with Quantified Uncertainty Extracted from Atomistic Simulations Using Bayesian Inference" *12th US National Congress on Computational Mechanics*, Raleigh, NC, July 22-25, 2013.

C.20. **Salloum, M.**, P.E. Gharagozloo. "Continuum and Particle Scale Models of Uranium Hydride Decomposition" *Zing International Hydrogen and Fuel Cells Conference*, July 12-15, 2013, Napa, CA.

C.19. **Salloum, M.**, Ma, R., Zhu, L. Applying Polynomial Chaos Expansions To Evaluate The Effect Of Tissue Non-Homogeneous Properties In Biotransport. Proceedings of the ASME 2013 Summer Bioengineering Conference, Paper No. BIO2013-14174, 26-29 June 2013, Sunriver, Oregon.

C.18. **Salloum, M.**, Templeton, J. "Continuum Scale Constitutive Laws with Quantified Uncertainty Extracted from Atomistic Simulations Using Bayesian Inference" *SIAM Computational Science and Engineering 2013*, Boston, February 24-March 1, 2012.

C.17. **Salloum, M.**, Kanouff, M.P., Shugard, A.D., Gharagozloo, P.E. "A Coupled Transport and Solid Mechanics Formulation for Modeling Oxidation and Decomposition in a Uranium Hydride Bed" *Proceedings of the ASME 2012, International Mechanical Engineering Congress and Exposition*., Paper No: IMECE2012-87174, 9-15 November 2012, Houston, TX.

C.16. **Salloum, M.**, Sargsyan, K., Najm, H., Debusschere, B., Jones, R. "Quantifying Parametric Uncertainty and Sampling Noise in Coupled Atomistic-to-Continuum Simulations" *SIAM Uncertainty Quantification 2012 Conference*. April 2-5, Raleigh, NC, USA.

C.15. **Salloum, M.**, Sargsyan, K., Najm, H.N., Debusschere, B., Jones, R., Adalsteinsson, H. "Propagating Uncertainty from Simulation Parameters and Sampling Noise through Coupled Atomistic-to-Continuum Systems" *2011 DOE Applied Mathematics Program Meeting*, Reston, VA, October 17-19, 2011.

C.14. **Salloum, M.**, Najm, H., Knio, O.M. "Analysis and Reduction of a Simplified Stochastic Chemical System via CSP" *3rd International Workshop on Model Reduction in Reacting Flows.* April 27-29, Corfu, Greece.

C.13. **Salloum, M.**, Sargsyan, K., Najm, H., Debusschere, B., Jones, R., Adalsteinsson, H. "Stochastic Atomistic-to-Continuum Coupling using Bayesian inference" *SIAM Computational Science and Engineering 2011 Conference*. February 28-March 4, Reno, NV, USA.

C.12. Rizzi, F., **Salloum, M.**, Marzouk, Y.M., R. Xu., Falk, M., Weihs, T.P., Fritz, G., Knio, O.M. "Bayesian Inference of Atomic Diffusivity in a Binary Ni/Al System based on Molecular Dynamics" *SIAM Computational Science and Engineering 2011 Conference*. February 28-March 4, Reno, NV, USA.

C.11. **Salloum, M.**, Alexanderian, A., Le Maitre, O.P., Najm, H., Knio, O.M. "Simplified CSP analysis of uncertain ODE systems" *SIAM Computational Science and Engineering 2011 Conference*. February 28-March 4, Reno, NV, USA.

C.10. Adalsteinsson, H., Najm, H., Debusschere, B., Jones. R., Sargsyan, K., Knio, O.M., Rizzi, F., **Salloum, M.** "Quantifying Prediction Fidelity in Multiscale Multiphysics Simulations" *2010 DOE Applied Mathematics Program Meeting*, Berkeley, CA, May 3-5, 2010.

C.9. Marzouk, Y., Coles, T., Najm, H., Berry, R., Debusschere, B., Ghanem, R., Meidani, H., Knio, O.M., **Salloum, M.** "Analysis and Reduction of Complex Network under Uncertainty" *2010 DOE Applied Mathematics Program Meeting*, Berkeley, CA, May 3-5, 2010.

C.8. Su, D., Ma, R., Zhu, L., **Salloum, M.** "Multi-Scale Simulation of Nanoparticle Transport and Deposition in Tissue during Nanofluid Injection Process" *ASME 2009 Micro/Nanoscale Heat and Mass Transfer International Conference,* Paper No. MNHMT2009-18419, December 18-21, 2009, Shanghai, China.

C.7. Su, D., **Salloum, M.**, Ma, R., Zhu, L. "Experimental and Computational Study of Nanoparticle Transport in Agarose Gel" *Proceedings of the ASME 2008 Summer Heat Transfer Conference,* Paper No. HT2008-56316, August 10-14, 2008, Jacksonville, Florida, USA.

C.6. Zhu, L., Tolba, M., Arola, D., **Salloum, M.**, Alvarez, J., Meza, F and Fouad, A. "Theoretical Evaluation of Tissue Damage using Er,Cr:YSGG Laser for Root Canal Preparation" *Proceedings of the ASME 2008 Summer Bioengineering Conference,* Paper No. BIO2008-191773, 25-29 June 2008, Marriott Resort, Marco Island, Florida.

C.5. **Salloum, M.**, Ma, R.H. and Zhu, L. "An in-vivo Experimental Study of Temperature Elevations in Animal Tissue during Magnetic Nanoparticle Hyperthermia" *Proceedings of the ASME 2008 Summer Bioengineering Conference,* Paper No. BIO2008-192321, 25-29 June 2008, Marriott Resort, Marco Island, Florida.

C.4. Su, D., Ma, R., Zhu, L., **Salloum, M.** "Multi-Scale Simulation of Nanoparticle Transport and Deposition in Tissue during Nanofluid Injection Process" *ASME 2009 Micro/Nanoscale Heat and Mass Transfer International Conference,* Paper No. MNHMT2009-18419, December 18-21, 2009, Shanghai, China.

C.3. **Salloum, M.**, Ma, R.H. and Zhu, L. "Controlling Nanoparticle Delivery in Hyperthermia for Cancer Treatment: In Vitro experimental study" *Proceedings of the ASME 2007, International Mechanical Engineering Congress and Exposition*., Paper No: IMECE2007-43443, 10-16 November 2007, Seattle, WA.

C.2. Salloum, M., Ghaddar, N. and Ghali, K. "A New Transient Bio-Heat Model of the Body" *Proceedings of the ASME 2005, Summer Heat Transfer Conference,* Paper No: HT2005-72303, 17-22 July 2005, San Francisco.

C.1. "Regional collaboration workshop on energy efficiency and renewable technology," *Energy analysis and auditing training*, American University of Beirut – Lebanon, April 27-28 2004.

POSTER PRESENTATIONS

P.4. **Salloum, M.**, Buffleben, G.M., Cappillino, P.J., James, S.C., Robinson, D.B. Sheridan, L.B., Kim, Y.G. Stickney, J.L. "Enhanced Hydrogen Uptake and Release in Near-Surface Alloys of Palladium Fabricated by Electrochemical Atomic Layer Deposition" *Materials Research Society Spring Meeting 2013*, San Francisco, April 1-5, 2013.

P.3. **Salloum, M.**, Sargsyan, K., Najm, H., Debusschere, B., Jones, R., Adalsteinsson, H. "Stochastic Atomistic-to-Continuum Coupling using Bayesian inference", *Bay Area Scientific Computing Day*, May 8, 2011, Stanford University, Menlo Park, CA, USA.

P.2. **Salloum, M.**, Ma, R. and Zhu, L. **"**Theoretical Investigation of Temperature Elevation in Rat Limb during Magnetic Nanoparticle Hyperthermia**"** *Experimental Biology meeting*, Poster #585.3, April 28 – May 2, 2007, Washington DC.

P.1. **Salloum, M.**, Ma, R. and Zhu, L. "Theoretical Investigations of the Temperature Elevation in a Standard Rat Limb Model During Magnetic Fluid Hyperthermia" *UMBC 40th anniversary, Mechanical Engineering Graduate Research Forum*, October 19-21, 2006. **Certificate of Excellence, 3rd award.**

TECHNICAL REPORTS

T.5. **Salloum, M.,** Fabian, N., Hensinger, D.M. Templeton, J.A. "Compressed Sensing and Reconstruction of Unstructured Mesh Datasets", 2015, SAND 2015-4995C

T.4. Kruizenga, A.M., **Salloum, M.**, Crocker, R. "Development of a flow sensor using vortex induced thermal gradients" SAND report, 2013-7885.

T.3. **Salloum, M.**, P.E. Gharagozloo. "Empirical and Physics-Based Mathematical Models of Uranium Hydride Decomposition Kinetics with Quantified Uncertainties" SAND report, 2013.

T.2. **Salloum, M.**, Shugard, A.D., M.P. Kanouff, P.E. Gharagozloo. "A Coupled Transport and Solid Mechanics Formulation with Improved Reaction Kinetics Parameters for Modeling Oxidation and Decomposition in a Uranium Hydride Bed" SAND report, 2013-2001.

T.1. Lee, J., Jones, R.E., Kung, A., **Salloum, M.**, Templeton, J.A., Ward, D., Wong, B.M., Davidson, S., Griffiths, S.K., Nilson, R.H. "Bridging the Gap Between Atomistic Phenomena and Continuum Behavior in Electrochemical Energy Storage Processes" SAND report, 2012-7831.

LANGUAGES

Trilingual: Speaks and writes all Arabic, French and English fluently.