

Nader E. Abedrabbo

203-550 Westmount Rd. W. ♦ Kitchener, ON, N2M 5G5 ♦ CANADA

Tel: (519) 574-7234 ♦ E-mail: anenader@gmail.com ♦ Web: www.egr.msu.edu/~anenader

EDUCATION

- 2002-2005** **Doctorate of Philosophy in Mechanical Engineering**
Michigan State University. East Lansing, Michigan, USA
August 2005
Dissertation Topic: “Forming of Aluminum Alloys at Elevated Temperatures”
- 2000-2002** **Master of Science in Mechanical Engineering**
Michigan State University. East Lansing, Michigan, USA
August 2002
Fulbright Scholar
Thesis Topic: “Experimental and Numerical Investigations of Stamp Hydroforming and Ironing of Wrinkling in Sheet Metal Forming”
- 1990-1995** **Bachelor of Science in Mechanical Engineering**
College of Engineering and Technology, Hebron, West Bank
June 1990
Thesis Topic: “50 Ton Crane Design for Quarry Industry”

WORK EXPERIENCE

- 07/07 – Present** **Research Associate Professor**
University of Waterloo. Waterloo, Ontario, Canada
- Conducted research in tube and metal forming technologies
 - Developed process design and optimization methods for tube and sheet metal forming
 - Developed and implemented plasticity models for the finite element method
 - Supervised graduate students in performing research
 - Developed and submitted project proposals for NSERC (proposal accepted)
- 08/05 – 06/07** **Post Doctoral Research Associate**
University of Waterloo. Waterloo, Ontario, Canada
- Conducted research in tube and metal forming technologies
 - Developed process design and optimization methods for tube and sheet metal forming
 - Developed phenomenological and micromechanical models for prediction of material behavior
 - Supervised graduate students in their research
 - Developed new research projects and proposals
 - Reviewed journal papers manuscripts for several journals and conferences, e.g. Int. J. of Plasticity, Int. J. of Machine Tools and Manufacture, Int. J. of Mechanical Sciences, NUMISHEET2005.
- 08/00 – 07/05** **Research Assistant / Teaching Assistant**
Michigan State University / Department of Mechanical Engineering
- Conducted research in metal sheet forming technologies
 - Developed phenomenological and micromechanical models for prediction of material behavior and plasticity
 - Developed and implement UMAT’s (Material Constitutive Models) into

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FEM codes for numerical simulations

- Used various Finite Element Commercial software: **LS_DYNA, ABAQUS**
- Supervised other graduate students in their research work
- Performed teaching assistant for several classes

07/03 – 08/05

Research Consultant

Red Cedar Technology, East Lansing, Michigan

- Tested HEEDS optimization program to solve a multitude of technical problems for industry
- Performed consulting on metal forming and hydroforming

08/04 – 09/05

Conference Organization/Web Design

- Helped organize the “6th International Conference and Workshop on Numerical Simulation of 3D Sheet Forming Processes” to be held in Detroit
- Created website and perform website maintenance for the conference

09/95 – 07/00

Auto Mechanic Teacher/Trainer/Producer

Lutheran World Federation Secondary Vocational School
Jerusalem, ISRAEL

- Gave students up-to-date theoretical and practical lessons
- Served on quality committee and strategic planning team for the school

1989 – 2000

Mechanical Engineer / Technical Advisor

Abedrabbo Lathe Turnery Workshop. Beit Jala, West Bank

- Performed mechanical assembly jobs done at the workshop
- Made drawings and calculations for new equipment to be manufactured
- Conducted quality control of final products

TRAINING

06/01

LS-DYNA Finite Element Analysis Software

Livermore Software Technology Corporation. Livermore, California
(56 classroom hours)

03/01

HyperMesh Finite Element Pre- Post-Processor Software

Altair Engineering Co. Allen Park, Michigan
(2 days)

03/00 – 04/00

Faultfinding Problems in Electronic Ignition and Injection in cars

Handwerkskammer zu Köln. Cologne Chamber of Industries. Germany

- Identified problems in Engine Management systems for SI and DI engines, Electronic- Automatic Transmission systems, ASR, SRS, ABS, Bosch testing equipment

09/99 – 07/99

“How to Start a Small Business”

Beir-Zeit University continuous learning program

- Learned the required managerial and logistical information required to start and run a small business as part of the entrepreneurship program

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- 07/97 – 01/98** **Modern Fuel Injection and Electronic Ignition Systems**
Kalajokilaakso Vocational College. Nivala, FINLAND
- Learned the operation of the **BOSCH 560** Tester
 - Tested Motronic and Mono-Jetronic Fuel Injection Systems

- 05/97 – 07/97** **Computerized Diagnostics Service**
Allen Institute. Petah Tekva, Israel
- Trained on the use of the BEAR 400 Professional Workstation
 - Use of the OTC computer on-board Scanner
 - BEAR CCD1000 wheel alignment

COMPUTER SKILLS

- | | | |
|---------------|-----------|-------------------------|
| • LS_Dyna | • ABAQUS | • HyperMesh |
| • FORTRAN | • Labview | • MATLAB |
| • MS-Office | • ACAD | • SolidWorks |
| • UniGraphics | • HTML | • Windows 95/98/2000/XP |

HONORS & ACHIEVEMENTS

- Awarded the **Ph.D. Completion Fellowship** by the Department of Mechanical Engineering at Michigan State University, USA, 2005.
- Awarded the **Outstanding Paper** scholarship from the NUMIFORM 2004 conference organized at the Ohio State University, Ohio, 2004.
- Recipient of the **2000-2002 FULBRIGHT SCHOLARSHIP** from The Institute of International Education (IIE) for graduate study at Michigan State University.
- Two journal papers ranked as number [“1”](#) and [“10”](#) of “TOP25” most requested downloads from the Int. Journal of Mech. Sciences and the Int. Journal of Plasticity, respectively, in the 1st and 4th quarters of 2005.

PUBLICATIONS

Journal Papers:

- **Nader Abedrabbo**, Robert Mayer, Christopher Salisbury, Michael Worswick, and Isadora van Riemsdijk, “Crashworthiness of advanced high-strength steel tubes: experimental and numerical results”, *J. of Impact Engineering*, October 2007.
- **Nader Abedrabbo**, Michael Worswick, Robert Meyer and Isadora van Riemsdijk “Optimization methods for the tube hydroforming process applied to advanced high-strength steels with experimental verification”, Submitted to *J. of Mat. Processing Tech.* Sep. 2007.
- **Nader Abedrabbo**, Farhang Pourboghraat and John Carsley, “Forming of AA5182-O and AA5754-O at Elevated Temperatures using Coupled Thermo-Mechanical Finite Element Models”, *Int. J. of Plasticity*, Volume 23, Issue 5, May 2007, Pages 841-875.
- **Nader Abedrabbo**, Farhang Pourboghraat and John Carsley, “Forming of Aluminum Alloys at Elevated Temperatures –Part 1: Material Characterization”, *Int. J. of Plasticity*, Volume 22, Issue 2, February 2006, Pages 314-341.

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- **Nader Abedrabbo**, Farhang Pourboghrat and John Carsley, “Forming of Aluminum Alloys at Elevated Temperatures –Part 2: Numerical Modeling and Experimental Verification”, *Int. J. of Plasticity*, Volume 22, Issue 2, February 2006, Pages 342-373.
- **N. Abedrabbo**, M. Zampaloni and F. Pourboghrat “Wrinkling Control in Aluminum Sheet Hydroforming”, *International Journal of Mechanical Sciences*, Volume 47, Issue 3, March 2005, Pages 333-358.
- Zampaloni M., **Abedrabbo N.** and Pourboghrat F. “Experimental and Numerical Study of Stamp Hydroforming of Sheet Metals”, *International Journal of Mechanical Sciences*, Volume 45, Issue 11, November 2003, Pages 1815-1848.

Conference Papers(Refereed):

- **Nader Abedrabbo**, Robert Mayer, Michael Worswick, Isadora van Riemsfijk, “Tube Hydroforming Optimization of High-Strength Steel Tubes”, in *NUMISHEET2008*, Interlaken, Switzerland, September 1-5, 2008.
- **Nader Abedrabbo**, Robert Mayer, Michael Worswick, Isadora van Riemsfijk, “Crashworthiness of High-Strength Steel Tubes”, in *NUMISHEET2008*, Interlaken, Switzerland, September 1-5, 2008.
- B. W. Williams, C. H. M. Simha, **N. Abedrabbo**, and M. J. Worswick, R. Mayer, “Effect of Anisotropy, Kinematic Hardening, and Strain-Rate Sensitivity on the Predicted Axial Crush Response of Hydroformed Aluminium Alloy Tubes”, in *Int. Conf. on Impact Loading of Lightweight Structures*, Trondheim, Norway, June 17-19, 2008.
- **N. Abedrabbo**, F. Pourboghrat, “Warm Forming of Aluminum Alloys” in *The 4th Annual American Hydroforming Conference*, London, Ontario, Sept. 25-27, 2006.
- **N. Abedrabbo**, F. Pourboghrat, “A Coupled Thermo-Mechanical Anisotropic Finite Element Model For Warm Forming Of AA5182-O And AA5754-O” in *The Twelfth International Symposium on Plasticity (PLASTICITY 2006)*, Halifax, Canada, July 17-22, 2006.
- **Nader Abedrabbo**, Farhang Pourboghrat and John Carsley, “Coupled Thermo-Mechanical Simulation of Warm Forming for Aluminum Alloys”, in *NUMISHEET2005*, Detroit, Michigan, August 15-19, 2005.
- Nima Salajegheh, **Nader Abedrabbo** and Farhang Pourboghrat, “Numerical Implementation of an Efficient Algorithm for Continuum Damage Based Elastoplastic Constitutive Equation in Ls-Dyna” in *NUMISHEET2005*, Detroit, Michigan, August 15-19, 2005
- **N. Abedrabbo**, F. Pourboghrat, “An Experimental and Numerical Study of Warm Forming of Aluminum Alloy Sheets” in *The Eleventh International Symposium on Plasticity (PLASTICITY 2005)*, Kauai, Hawaii, Jan. 4-8, 2005.
- **N. Abedrabbo**, F. Pourboghrat and J. Carsley, “Sheet Hydroforming Simulation of a License-Plate-Pocket Panel” in *NUMIFORM2004*, edited by Somnath Ghosh, Ohio, USA (2004).

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- **N. Abedrabbo**, N. Zafar, R. Averill F. Pourboghrat and R. Sidhu, “Optimization of a Tube Hydroforming Process” in *NUMIFORM2004*, edited by Somnath Ghosh, Ohio, USA (2004).
- **Abedrabbo N.**, Zampaloni M. and Pourboghrat F., “Numerical Study of Wrinkling Behavior of AL6111-T4 in Stamp Hydroforming” in *NUMISHEET2002*, edited by Dong-Yal Yang et al., Korea, pp. 331-336 (2002).
- M. Zampaloni, **N. Abedrabbo** and F. Pourboghrat “Experimental and Numerical Study of Stamp Hydroforming for Processing Aluminum Parts”, Sixth U.S. National Congress on Computational Mechanics (USACM), Edited by G. M. Hulbert, August 2001.

Planned Journal Papers:

- Williams, B., Simha, H., **Abedrabbo, N.**, and M. J. Worswick, “Effect of Anisotropy, Kinematic Hardening, and Strain-rate on the Predicted Axial Crush Response of Hydroformed Aluminium Alloy Tubes”, Journal paper to be submitted in 2007.
- Narasimhan, S., **Abedrabbo, N.**, and M. J. Worswick, “Optimization of laser welded tailor welded tubes for hydroforming application”, Journal paper to be submitted in 2007.

PROFESSIONAL ACTIVITIES

- Member of the “Graduate Advisory Committee” at Michigan State University for 2 years.
- International Journal of Plasticity: Journal paper reviews.
- International Journal of Machine Tools & Manufacture: Journal paper reviews.
- International Journal of Mechanical Sciences: Journal paper reviews.
- SAE 2006 World Congress & Exhibition: Conference Papers Review.

REFERENCES

- Availbe upon request