

## **Wojciech Kalata, M.S.**

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### **PERSONAL INFO**

- Unites States citizen
- Born May 26, 1975 in Nowy Targ, Poland

### **EDUCATION**

*Bachelors of Science in Mechanical Engineering, May 1999*

Major GPA: 4.3/5.0, Overall GPA: 3.7/5.0

*Masters of Science in Mechanical Engineering, December 2002*

Major GPA: 4.8/5.0, Overall GPA: 4.8/5.0

*Doctor of Philosophy of Science in Mechanical Engineering, exp.in December 2007*

Major GPA: 4.6/5.0, Overall GPA: 4.6/5.0

### **PROFESSIONAL EXPERIENCE**

1. Spraying Systems Co., Spray Analysis and Research Services, Wheaton, Illinois.  
Research Engineer, November 2006-present – laboratory and computational fluid dynamics analysis of spray based systems.
2. The University of Illinois at Chicago, Department of Mechanical and Industrial Engineering, Chicago, Illinois.
  - *Research assistant, Spring 2001-Spring 2003, Spring 2004* - biofluids research including MRI and Ultra-Sound image processing, computational fluid dynamics and experimental measurements in cerebrospinal fluid and blood related flows, rapid prototyping, and model fabrication. Contact: Francis Loth, Ph.D.
  - *Teaching assistant – Heat Transfer (ME 321), Spring, Fall 2006, Spring, Fall 2005, Fall 2004, Fall 2003, Spring 2000* - laboratory instruction, exam and homework evaluation, occasional lectures, and student support.
  - *Teaching assistant – Fluid Mechanics II (ME 318), Fall 2000* - exam and homework evaluation, occasional lectures, and student support.
3. Argonne National Laboratory, Division of Mathematics and Computers Science, Argonne, Illinois,  
Summer student appointment, 2000 - programming and computational fluid dynamics simulations of cerebrospinal fluid. Contact: Paul Fischer, Ph.D.

### **COMPUTER SKILLS**

*Languages:* Matlab, FORTRAN.

*Systems:* Windows DOS, 95-XP, Red Hat Linux 6.2-Fedora 2.

*Software:* Pro-E (19-2001), Inventor (9-11), Auto-CAD (LT and 12), Fluent, Star-CD, Gambit, Pro-AM Matlab (5.3-8.0), Maple (5-98), Microsoft Office, Mimics (5.3-8.1), LabVIEW, and various MRI, image and video conversion and editing software.

### **SPECIAL SKILLS**

1. Computational Fluid Dynamics (Star-CD and Pro-AM, Fluent and Gambit).
2. Magnetic Resonance and Computed Tomography Image Processing (Mimics and Matlab).
3. Rapid Prototyping (FDM1650 and FDM3000 machines with QuickSlice and Insight software).
4. Fluent in Polish language.

### **DISTINCTIONS, AWARDS, HONORS**

1. Recipient of the \$5000 Pulaski Scholarship for Advanced Studies Program administered by the American Council for Polish Culture, May 2003.
2. Research assistantship at Biofluids Laboratory, University of Illinois at Chicago, Department of Mechanical and Industrial Engineering, Spring 2001-Spring 2003, Spring 2004.
3. Summer student appointment at Argonne National Laboratory, Division of Mathematics and Computers Science, Summer 2000.
4. Second Place on UIC Engineering Expo'99 in Health and Medicine Category.
5. Academic Achievement Award for 1997-98 at UIC Men's Varsity Soccer.

### **MEMBERSHIPS AND INTERESTS**

1. Member of American Society of Mechanical Engineering (ASME), 11/2004 to 11/2006.
2. Member of Polish Arts Club of Chicago (PACC), 5/2003 to present.
3. Polish-American Student Association at UIC (PASA), member, 1/1996 to 1/2003.
4. UIC Soccer Team, Division I (NCAA), athlete, 8/1995 to 5/1998.
5. Chicago Highlanders Soccer Club (Metropolitan League), member and athlete, 3/1990 to present.

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### **PUBLISHED WORK - Journal Papers**

1. B.A. Martin, W. Kalata, F. Loth, T.J. Royston, J.N. Oshinski, "Syringomyelia hydrodynamics: an in vitro study based on in vivo measurements," Vol. 127, no. 7 pp. 1110-1120, Journal of Biomechanical Engineering, December 2005.
2. M.D. Ford, H.N. Nikolov, J.S. Milner, S.P. Lownie, E.M. DeMont, W. Kalata, F. Loth, D.W. Holdsworth, D.A. Steinman, "PIV-Measured Versus CFD-Predicted Flow Dynamics in Anatomically-Realistic Cerebral Aneurysm Models" *submitted to Journal of Biomechanical Engineering.*

### **PUBLISHED WORK - Misc.**

1. W. Kalata, "Numerical simulation of cerebrospinal fluid motion within the spinal canal," MS Thesis in M.E., University of Illinois at Chicago, December 2002.

### **PUBLISHED WORK - Conference Papers**

1. **K. Knasiak**, R. Schick, W. Kalata, "Multiscale design of rain simulator," 20th Annual ILASS-Americas Conference, Chicago, Illinois, May 2007.
2. B.A. Martin, W. Kalata, F. Loth, T.J. Royston, **J.N. Oshinski**, "Syringomyelia hydrodynamics: an in vitro study based on in vivo measurements," 2005 Summer Bioengineering Conference, Vail, CO, June 2005.
3. **M.D. Ford**, H.N. Nikolov, J.S. Milner, W. Kalata, F. Loth, S.P. Lownie, D.W. Holdsworth, D.A. Steinman, "In vitro validation of an image-based CFD model of an anatomically realistic cerebral aneurysm," 2005 Summer Bioengineering Conference, Vail, CO, June 2005. (*Submitted*)
4. **W. Kalata**, B.A. Martin, J. Oshinski, F. Loth, "Hydrodynamics of cerebrospinal fluid in spinal canal with chiari malformation and syringomyelia", 2004 ASME International Mechanical Engineering Congress & Exposition, Anaheim, CA, November 2004.
5. **B.A. Martin**, W. Kalata, J.N. Oshinski, F. Loth, T.J. Royston, "Construction and validation of a complaint model of the cerebrospinal fluid system with fluid filled syrxn", 2004 ASME International Mechanical Engineering Congress & Exposition, Anaheim, CA, November 2004.
6. W. Kalata, S.E. Lee, N. Alperin, P.F. Fischer, **F. Loth**, "Numerical simulation of cerebrospinal fluid motion within a healthy and diseased spinal canal," World Congress of Biomechanics, Proceedings CD, Calgary, Canada, August 2002.
7. **W. Kalata**, S. Lee, N.E. Piersol, N. Alperin, P.F. Fischer, F. Loth, "Three-dimensional computational fluid dynamics of cerebrospinal fluid motion within the spinal cavity," Proceedings of the 2001 Bioengineering Conference, BED-Vol. 50, R.D. Kamm, J.W. Schmid-Schnbein, G.A. Ateshian, M.S. Hefzy, Eds., Snowbird, Utah, pp. 449-50, June 2001.
8. **N.E. Piersol**, S. Lee, W. Kalata, F. Loth, P.F. Fischer, N. Alperin, H.B. Bassiouny, "Automated simulation of velocity and wall shear stress patterns inside a healthy carotid bifurcation," Proceedings

of the 2001 Bioengineering Conference, BED-Vol. 50, R.D. Kamm, J.W. Schmid-Schnbein, G.A. Ateshian, M.S. Hefzy, Eds., Snowbird, Utah, pp. 755-6, June 2001.

9. **S. Lee**, N.E. Piersol, W. Kalata, C.L. Skelly, M.A. Curi, P.F. Fischer, F. Loth, L.B. Schwartz, "Numerical simulation of vein graft hemodynamics," Proceedings of the 2001 Bioengineering Conference, BED-Vol. 50, R.D. Kamm, J.W. Schmid-Schnbein, G.A. Ateshian, M.S. Hefzy, Eds., Snowbird, Utah, pp.733-4, June 2001.

#### **PRESENTED WORK – Symposium and Conferences**

1. **W. Kalata**, B.A. Martin, F. Loth, T.J. Royston, J.N. Oshinski, M. Jerosch-Herold, "Pulse wave velocity measurement in the spinal canal," Biomedical Engineering Society 2006 Annual Meeting, Chicago, IL, October 2006.
2. **B.A. Martin**, W. Kalata, F. Loth, T.J. Royston, J.N. Oshinski, "Characterization of pressure wave transmission inside a fluid filled syringe," Biomedical Engineering Society 2006 Annual Meeting, Chicago, IL, October 2006.
3. **W. Kalata**, B.A. Marin, J.N. Oshinski, F. Loth, "Differences in CSF Motion in Chiari Malformation Patients and Healthy Volunteers," 3<sup>rd</sup> Annual Symposium of Neural Hydrodynamics, Columbus, OH, May 2005.
4. **B.A. Marin**, W. Kalata, T.J. Royston, J.N. Oshinski, F. Loth, "Experimental Syringomyelia Hydrodynamics: Potential Importance of Pressure Phase Relation on Syringe Pathogenesis," 3<sup>rd</sup> Annual Symposium of Neural Hydrodynamics, Columbus, OH, May 2005.
5. B.A. Martin, W. Kalata, J.N. Oshinski, **F. Loth**, "The engineering perspective: syringomyelia," ASAP Annual Conference, Key Biscayne, FL, July 2004.
6. **B.A. Martin**, W. Kalata, J.N. Oshinski, F. Loth, "Investigating the mechanical environment within a compliant coaxial tube model," ASAP Annual Conference, Key Biscayne, FL, July 2004.
7. B.A. Martin, W. Kalata, J.N. Oshinski, **F. Loth**, "Importance of mechanical forces in the development of syringomyelia for patients with Chiari malformation," ASAP Annual Conference, New York City, NY, July 2003.
8. B.A. Martin, W. Kalata, T.J. Royston, J.N. Oshinski, **F. Loth**, "Experimental study on pressure and hydrodynamic flow within the subarachnoid space," 2<sup>nd</sup> Annual Symposium of Neural Hydrodynamics, Menlo Park, CA, May 1st, 2004.
9. **F. Loth**, W. Kalata, N. Alperin, T. Lichtor, "Engineering perspective," ASAP Annual Conference, St. Louis, MO, July 2002.
10. **F. Loth**, W. Kalata, N. Alperin, T. Lichtor, "The potential of computer simulations to help in the diagnosis and treatment of syringomyelia," ASAP Annual Conference, St. Louis, MO, July 2002
11. **W. Kalata**, S.E. Lee, N. Alperin, P.F. Fischer, F. Loth, "Calculation of unsteady resistance within the spinal canal based on MRI measurements," 1<sup>st</sup> Symposium of Neural Hydrodynamics, Pittsburgh, PA, September 2002.

#### **PRESENTED WORK – Misc.**

1. B. A. Martin, W. Kalata, J.N. Oshinski, **F. Loth**, "Engineering Perspective on Diseases Related to CSF Motion," Grand Rounds of Department of Neurosurgery, University of Chicago, Chicago, IL, June 2003.

\*\*\* *Bold face indicates presenter* \*\*\*