

Qi Wang

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CAREER OBJECTIVE:

A challenging engineering position with emphasis on Finite Element Analysis (FEA), design optimization, linear/nonlinear structural analysis, polymer material processing, injection and extrusion simulation

SPECIALIZED SKILLS:

- Five years' working experience in Finite Element Analysis (FEA), polymer material processing, and optimization-based design
- Knowledge in linear and non-linear Finite Element Analyses, heat transfer, structure mechanics, and Computational Fluid Dynamics analysis
- Experience in solid structural modeling and simulation using HyperMesh 6.0 and ABAQUS 6.4-4
- Experience in developing computer program using FORTRAN for FEA application and computer aided modeling
- Experience in design optimization of polymer sheet extrusion
- Proficient in Visual Fortran, Mathematica, Matlab, MathCad, Microsoft Word, Excel, PowerPoint, Access and Webpage design

WORK EXPERIENCE:

July 2002 - present **Research Assistant**, University of Missouri-Columbia

- Developed Finite Element methods for simulation-based design with a focus on design sensitivity analysis, multidisciplinary analysis and optimization, and reliability-based design
- Performed 3-D thermal and structural analyses to support product development using design-driven optimization approaches
- Conducted flow modeling and simulation in polymer processing
- Conducted research on solid structure design using 3-D Finite Element Analysis, Finite Element software ABAQUS 6.4-4, and HyperMesh 6.0
- Developed computer aided simulation for optimization-based designs of polymer sheet extrusion

January 2006 - present **Teaching Assistant**, University of Missouri-Columbia

- Instructing senior level Control Systems lab course using MATLAB and LabView

August 2001 - May 2002 **Teaching Assistant**, Colorado School of Mines, Golden, Colorado

- Assisted in lab development, validation and application of basic theories in machine design
- Introduced MathCad to students thereby helped them analyze engineering problems

EDUCATION:

Ph.D. Candidate, Mechanical Engineering, University of Missouri-Columbia

Expected graduation date: December 2006 GPA: 3.8/4.0

Master of Science, Mechanical Engineering, University of Missouri-Columbia

Graduation date: August 2003 GPA: 4.0/4.0

Mechanical Engineering, Colorado School of Mines, Golden, Colorado

August 2001 - July 2002 GPA: 3.4/4.0

Bachelor of Science, Mechanical Engineering, Wuhan University of Technology

Graduation date: July 1999

MAIN PROJECTS:

- **Advanced Analysis and Design of Polymer Sheet Extrusion.** PhD dissertation. Sep.03 - present
Develop the design methodologies of polymer extrusion and their applicability in efficiently modeling and simulating polymer processing and die design

- **Incorporated Fluid-Structure Interaction in the Optimization-Based Design of Polymer Sheeting Dies.** Funded by National Science Foundation. Aug.05 - May 06
Presented a polymer sheeting die design methodology which integrates the simulation of polymer melt flow and die cavity deformation with numerical optimization to compute die cavity geometry capable of giving a near-uniform exit flow rate
- **An Optimization-Based Approach to Computer Sheeting Die Designs for Multiple Operating Conditions and Adjustable Features.** Funded by National Science Foundation. July 02 - Sep.04.
Presented a polymer sheeting die design methodology and addressed the need for developing dies capable of performing well under multiple operating conditions
- **Incorporated Generalized Newtonian Fluids in the Optimization-Based Design of Polymer Sheet Dies.** Master thesis. July 02 - Aug.03
Extended earlier die design methods to include generalized Newtonian fluid (GNF) models that represent the shear-thinning behavior of polymer melt, and integrated finite element flow simulations, numerical optimization, and design sensitivity analyses to compute die cavity geometry

AWARDS AND HONORS:

- Superior Graduate Achievement Award, University of Missouri-Columbia (2005-2006).
- National Science Foundation(NSF) DMI Conference Fellowship (June 2006)
- Vice President, Friendship Association of Students, Colorado School of Mines (2001-2002).
- Outstanding Undergraduate Student, Mechanical Engineering, Wuhan University of Technology (1998-1999).

PROFESSIONAL AFFILIATIONS:

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| • Associate member of Sigma Xi, The Scientific Research Society | 2006-present |
| • Member of Society for Experimental Mechanics | 2006-present |
| • Member of American Institute of Aeronautics and Astronautics | 2004-present |
| • Student member of American Society of Plastics Engineers | 2003-present |

PUBLICATIONS:

- Qi Wang and Douglas E. Smith, "An Analysis of Fluid-Structure Interaction in the Optimization-Based Design of Polymer Sheeting Dies", *Accepted for publication in Journal of Applied Polymer Science*, September 2006.
- Qi Wang and Douglas E. Smith, "Incorporating Fluid-Structure Interaction in the Optimization-Based Design of Polymer Sheeting Dies", *11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Portsmouth, Virginia, September 2006.
- Qi Wang and Douglas E. Smith, "Incorporating Fluid-Structure Interaction in the Analysis of Polymer Sheeting Die", *SPE ANTEC Tech. Papers*, Charlotte, North Carolina, May 2006.
- Douglas E. Smith and Qi Wang, "Incorporating Adjustable Features in the Optimal Design of Polymer Sheet Extrusion Dies", *Journal of Manufacturing Science and Engineering*, October 2005.
- Douglas E. Smith and Qi Wang, "Optimization-Based Design of Polymer Sheeting Dies Using Generalized Newtonian Fluid Models", *Journal of Polymer Engineering and Science*, July 2005.
- Douglas E. Smith and Qi Wang, "An Optimization-Based Approach to Compute Sheeting Die Designs for Multiple Operating Conditions", *45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference*, Palm Springs, California, 2004.

REFERENCES:

Douglas E. Smith, Ph.D. (Ph.D. and M.S. Advisor)
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