

**Thomas J. Bress, Ph.D., P.E., CRE**  
**Senior Engineer**

**Professional Profile**

Dr. Bress has over 20 years of experience in the field of mechanical engineering. He has a strong thermo fluids background, with a special interest in non-Newtonian fluid mechanics. He has performed experimental measurements of polymer melt velocity fields during injection molding using laser-based techniques. He also has experience in melt flow simulation.

Dr. Bress has also performed research on the effect of fluid flow on combustion in engine cylinders, performing computational simulations of fluid flow and combustion in engine cylinders. His engine research has also been supplemented by practical experience designing intake manifolds and other air-handling components while working as a component engineer in the Engine Division of the Ford Motor Company.

Prior to joining Exponent Dr. Bress served as a laboratory manager at the University of Michigan where he created a suite of LabVIEW codes for the mechanical engineering department's undergraduate laboratory courses. He has a broad background in mechanical testing and measurement and instrumentation. Dr. Bress also served as an adjunct instructor and lecturer at the University of Michigan where he taught dynamics, thermodynamics, and laboratory courses.

Dr. Bress is a Certified LabVIEW Architect and a National Instruments Certified Professional Instructor. He has considerable experience designing customized data acquisition systems and has served as a LabVIEW consultant. He is currently writing a book about LabVIEW design patterns for National Technology and Science Press.

**Academic Credentials and Professional Honors**

Ph.D., Mechanical Engineering, University of Michigan, 2009  
M.S., Mechanical Engineering, Massachusetts Institute of Technology, 1989  
B.S., Mechanical Engineering, Massachusetts Institute of Technology, 1987

Robert Caddell Memorial Award for outstanding research in the areas of materials and/or manufacturing, 2010; Ford Technology Intensity Award for work on the development of nylon intake manifolds, 1994; DeVlieg Fellowship, 1997; University Fellowship, 1994

**Licenses and Certifications**

Professional Engineer, Maryland, #39335; Michigan, #6201039999; National Instruments Certified LabVIEW Architect; National Instruments Certified Professional Instructor; American Society for Quality, Certified Reliability Engineer, #7348

## **Publications**

Bress TJ, Dowling DR. Particle image velocimetry in molten plastic. *Polymer Engineering and Science* 2011; 51:730–745. Doi: 10.1002/pen.21881.

Bress T, Dowling D. Visualization of injection molding. *J Reinforced Plast Compos* 1998; 17(15):1374–1381.

## **Presentations**

Bress, T. From spaghetti code to state machines. NI Week, Austin TX, 2009, 2008.

Bress, T. Experimental measurement of melt velocity fields during injection molding. International Moldflow Users Group Meeting, Dearborn MI, 2008.

## **Prior Experience**

Adjunct Instructor, University of Michigan, 2009–2010

Laboratory and Classroom Services Manager, University of Michigan, 2008–2010

Undergraduate Laboratory Coordinator, University of Michigan, 2000–2008

Component Engineer, Engine Division, Ford Motor Company, 1989-1994

## **Academic Appointments**

Adjunct Instructor, University of Michigan, 2009–present

National Instruments Certified Professional Instructor, 2009–present

Lecturer, University of Michigan, 1999

Graduate Student Instructor, University of Michigan, 1995–1999

Graduate Student Instructor, Massachusetts Institute of Technology, 1988–1989

## **Peer Reviewer**

Polymer Engineering and Science

## **Professional Affiliations**

- American Society of Mechanical Engineers (member)
- American Society of Quality (member)
- Society of Plastics Engineers (member)