

## David Grewell

### Assistant Professor

Registered Professional Engineer

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### Education

Ph.D. Industrial, Welding and Systems  
Engineering, 2005  
The Ohio State University

M.S. Industrial, Welding and Systems  
Engineering, 2002  
The Ohio State University

B.S. Industrial, Welding and Systems  
Engineering, 1989  
The Ohio State University

### Honors and Awards

17 US patents

Best Paper Award, ANTEC 2006, SPE

Best Paper Award, ANTEC 2004, SPE

Phi Kappa Phi OSU Honors Society, 2003

Procter and Gamble Graduate Research  
Award, 2001

Best Paper Award, ANTEC 1997, SPE

### Recent Publications

A. Y. Yi, Y. Chen, F. Klocke, G. Pongs, A. Demmer,  
D. Grewell, A. Benatar, A High Volume Precision  
Compression Molding Process of Glass Diffractive  
Optics by Use of Micromachined Fused Silica  
Wafer Mold and Low Tg Optical Glass, Accepted  
July 2006, *Journal of Micromechanics and  
Microengineering*

D. Grewell, A. Benatar, Coupled Temperature,  
Diffusion and Squeeze Flow Model for Interfacial  
Healing Predictions, SPE ANTEC conference, 2006

M. Vlad, G. Harmon, D. Grewell, A. Benatar,  
Weldability of Bio-Renewable Ultrasonic Exfoliated  
Nanocomposites, SPE ANTEC conference, 2006

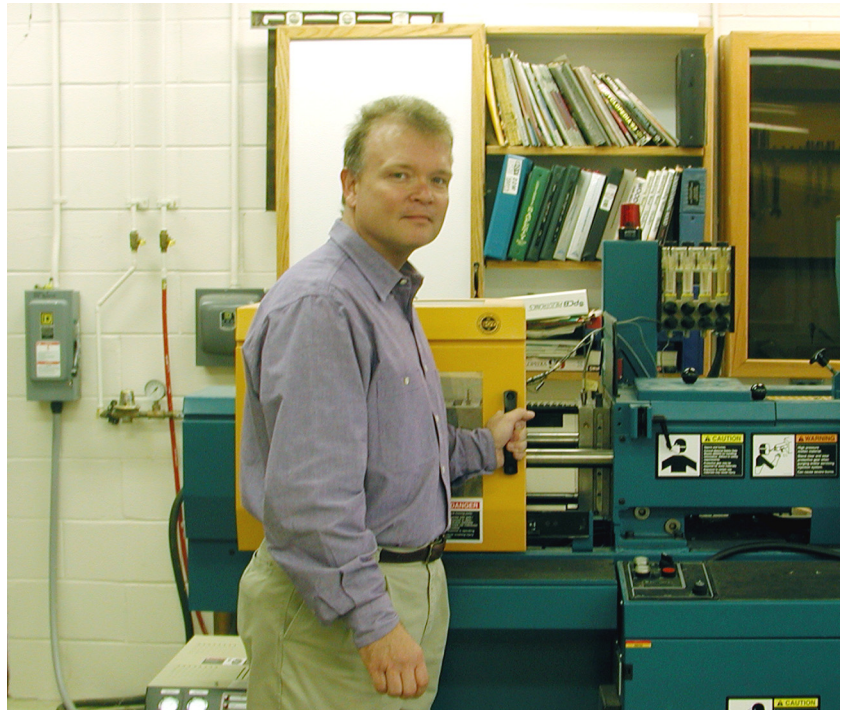
Chunmeng Lu, David Grewell James Lee, Avraham  
Benatar, *Analysis of Laser/IR-Assisted  
Microembossing*, Polymer Engineering and  
Science, 2005, 661-666, 45.6, Society of Plastic  
Engineers, Brookfield, CT

Val Kagan, David Grewell, Relationship Between  
Optical Properties and Optimized Processing  
Parameters for Through-transmission Laser  
Welding of Thermoplastics, *Journal of Reinforced  
Plastics and Composites*, The American Society  
for Composites, 2004, Vol 23, No 3, pages 239-247,  
Dayton, OH

*Part Design for Assembly*, Chapter on Laser  
Welding, Hanser Publications, Munich Germany, 2003

*Plastic and Composite Welding Handbook*, Editor  
and Co-author, 2003

David Grewell, A Prototype "Expert" System  
for Ultrasonic Welding of Plastics, *Plastics  
Engineering*, February 1999, Vol. LV, No. 2,  
pages 33-3, Brookfield, CT



### Teaching

Dr. Grewell teaches courses focused on manufacturing and with an emphasis on polymer processing, including process optimization, troubleshooting and modeling. He also teaches graduate classes focused on heat flow, fluid dynamics, material modeling and engineering fundamentals.

### Research

Dr. Grewell's research team work on the following main focuses areas:

#### *Bio-plastics*

In this work, naturally derived proteins from corn and soybeans are compounded and processed to form bio-degradable, bio-renewable polymers. The research includes, formulation, processing and application development.

#### *Bio-fuels*

Based on the worlds need for "green" renewable fuels Dr. Grewell's team is developing and characterizing the use of high power ultrasonics to enhance bio-fuels. Substrates ranging from corn to switch grass to soy-oils have been studied to enhance ethanol and bio-diesel fuels.

#### *Bio-Mass treatment*

In this work, high powered ultrasonics are used to treat municipal waste to enhance treatment and methane production. This work also include the treatment of animal waste.

#### *Micro-fabrication*

In this work, novel techniques for micro-fabrications on polymer substrates have been developed. These techniques are used to fabricate "labs-on-a-CD" for rapid, low costs frequent testing of various pathogens.

#### *Ultrasonic welding*

Based on fundamentals, polymer and metallic welds are modeled and characterize. The goal of this work it develop technology for aluminum cars, bio-renewable polymer packaging and environmentally consensus products.