

DAVID A. GREWELL

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OBJECTIVE

Faculty position in the area of micro-manufacturing and joining with an emphasis on polymer-based micro-electrical-mechanical-system and/or biomedical engineering and bio-renewable bio-degradable polymers and bio-renewable fuel sources and ethanol production.

EDUCATION

PhD in Welding Engineering. The Ohio State University, 2005. Minors in Biomedical Engineering and Polymer Processing. Thesis: *Diffractive Optics for Beam Shaping in Microwelding of Plastics and Modeling of Healing (GPA 3.99/4.0)*. Studies included chemical engineering, material science, industrial systems and biomedical. Laboratory experience with lithography, holography and **micro/nano-fabrication**.

M.S. in Welding Engineering, The Ohio State University, Columbus, Ohio, 2002. Thesis: *Laser Diode Micro-welding of Polycarbonate and Polystyrene (GPA 4.0/4.0)*.

B.S. in Welding Engineering, The Ohio State University, Columbus, Ohio, 1989. This curriculum covers both metals and non-metals. Elective studies were in Chemistry and Chemical Engineering. (GPA 3.0/4.0).

RESEARCH/EXPERIENCE

2005 to Present

IOWA STATE UNIVERISTY, Agricultural and Biosystems Engineering, Assistant Professor. Teaching responsibilities in polymer processing, metals processing, advanced polymer processing, strengths of materials and numerical methods. Research focus areas include bio-renewable bio-degradable polymers, nano-composites, bio-renewable fuels sources, high power ultrasonics, **ethanol and bio-diesel production**, micro-fabrications, and polymer and metal welding. Committee responsibilities in undergraduate curriculum committee, Faculty advisor to student National Association of Industrial Technology and departmental webpage design committee. Awarded grants as PI: Startup Funds, ISU, \$200,000, Ultrasonic Metal Welding, Branson Ultrasonic, \$153,910, Retooling Ethanol Industries: Integrating Ultrasonics into Dry Corn Milling to Enhance Ethanol Yield, Iowa Grow Value Fund, \$175,018, Ultrasonic Assisted Exfoliation of Bio-Renewable Polymer Nanocomposites with Micro-Cellular Structures Iowa Grow Value Fund, \$142,682, Exploratory Research with High Power Ultrasonics in Bio-Renewables, BBC, \$25,000. Over \$300,000 submitted proposal awaiting response and additional grants as Co-PI.

2001 to Present

GREWELL ENGINEERING CONSULTANTS Inc., *President*, Columbus, Ohio. Responsibilities include technical consulting and experimental research on plastic joining for industrial clients. Work includes **proposal preparation**, budget management, scheduling, report preparation, corporation legal management and employee management. Projects include optical design, joint design, metal welding, heat flow and stress analysis, vibrational analysis, process selection, patent review and market analysis. Clients include: Emerson Electric, Eastman Kodak, Waddington North America Inc., Edison Welding Institute and Numonics Corp.

2001 to 2005

THE OHIO STATE UNIVERSITY, *Graduate Research Associate*, Columbus, Ohio. Responsibilities include research work on laser welding, micro-joining technologies, micro-embossing, micro-assembly, lithography, welding of plastic lumber, ultrasonic treatment of advanced composites and material testing. Primary focus of study is on plastics, lasers, welding and micro-fabrication. Served as teaching assistant for several

classes and developed one class. Supervised MS and BS students as well as laboratory experiments.

- 1997 to 2001 BRANSON ULTRASONIC CORPORATION, *Research Project Manager Infrared Welding*, Danbury, Connecticut. Responsibilities include **project management** for the development of **novel laser welding product line**. Aspects include: machine concept development, equipment design, process modeling, laser and optical design, optical modeling, wave guide design, laser power supply development, application development, project planning, marketing studies, laser safety concerns, international team building with extensive European travel, customer interactions and sales, personal review, personal training including extensive PowerPoint® presentations and budget planning (\$250K). The use of use high power laser diodes (+45W), laser diode cooling and packaging is an extensive part of this position. This work resulted in a new product line for the company with annual sales of more than several **million dollars and five patents**. This work also resulted in the creation of several job positions, including application engineer, optical design engineer and manufacturing positions.
- 1992 to 1997 BRANSON ULTRASONIC CORPORATION, *Plastic Joining Specialist (Senior Research Engineer)*, Danbury, Connecticut. Responsibilities include project management for developing high power ultrasonic equipment for long-term industrial needs. Aspects include: **equipment design**, process modeling, statistical analysis and design of experiments, application development, project planning, marketing studies, development of **artificial intelligent software**, competitor evaluation, development of new joining techniques such as laser and IR welding and identifying industrial trends. This position reports directly to director of Advanced Programs and has a high level of confidentiality.
- 1989 to 1992 EWI/MATERIALS JOINING TECHNOLOGY, *Research Engineer (II)*, Columbus, Ohio. Responsibilities include: project management and engineering research. Management aspects include: report/proposal preparation, project budgeting and scheduling, technical staff supervision/training and general project management. Engineering aspects include: joint design, process optimization via statistical analysis and **design of experiments**, process selection, automation and development and development of joining procedures. Areas of focus were automotive, aerospace, ultrasonics and medical industries.
- 1987 to 1989 EDISON WELDING INSTITUTE, *Junior Technician*, Columbus, Ohio. Responsibilities included technical work on short- and long-term projects related to thermoplastics and composites processing and welding. This has resulted in practical and theoretical experience for: ultrasonic, induction, resistance-implant, linear and non-linear friction, hot plate, dielectric, IR and hot gas welding.
- 1984 to 1987 THE OHIO STATE UNIVERSITY, *Research Assistant and Technical Liaison*, Columbus, Ohio, Welding Engineering Department. Conducted studies on related variables and optimum parameters on ultrasonic compaction of polymer powders. Organized filming and layout of video for public recruiting to the department. Conducted literature review in polymer science: joining, processing and applications.
- 1984 to 1986 EDISON WELDING INSTITUTE, *Information Service Coordinator*
THE OHIO STATE UNIVERSITY, *Resident Advisor*
TRI-CITY AIRPORT, *Maintenance technician*

TEACHING

Assistant Professor, Iowa State University, Industrial Technology 130-Polymer Manufacturing and Processes, An introduction to polymer materials and associated manufacturing processes. Laboratory and lecture activities focus on the understanding of thermal, chemical, electrical, and mechanical properties of industrial materials. (2005)

Assistant Professor, Iowa State University, Industrial Technology 231, Introduction to Metallic Materials and Processes, A study of selected metallic materials and related processes used in manufacturing. Lecture and laboratory activities focus on metallic materials, properties, and processes. (2006)

Teaching Assistant, The Ohio State University, Welding Engineering 620-Engineering Analysis for Design and Simulations. Laboratory setup with ANSYS, substitute lecturer and general class assistant. (2004)

Instructor, The Ohio State University, Welding Engineering 694-Communications for Engineers. **Developed course** and **was Instructor** of class; prepared class syllabus, lectures, class notes, homework webpage and exams, and graded students. The class covered proposals, presentation techniques, **patent law**, market analysis, product planning and international project management. Had very positive feedback from student evaluations. (2004)

Teaching Assistant, The Ohio State University, WE 706-Welding of Plastics and Composites. Laboratory setup and general class assistant. Had very positive feedback from student evaluations. (2003)

Instructor, Seminar on Plastics Welding. September 2000, 2 days, Madison WI. The Madison Group and Rauwendaal Extrusion Engineering

Instructor, Seminar on Plastics Welding, including exams and certification. June 1998, 2 days, Detroit MI. Techtrax LLC.

Instructor, Seminar on Plastics Welding. September 1996, 3 days, Detroit MI. Society of Manufacturing Engineers.

SOFTWARE EXPERIENCE

Allen Bradley® PLC Programming
 LABVIEW®
 Systat®
 AutoCad® (Version 14)
 OSLO® (Version 5)
 EXSYS® (A/I Software development tool)
Ansys (Version 8.1)
Moldflow

HONORS

Best Paper Award, ANTEC 2006, Society Plastics Engineers, Joining of Plastics and Composites Special Interest Group, Brookfield CT

Best Paper Award, ANTEC 2004, Society Plastics Engineers, Joining of Plastics and Composites Special Interest Group, Brookfield CT

Phi Kappa Phi OSU **Honors Society**, 2003, Baton Rouge, LA

Procter and Gamble Graduate Research Award (2001)

Best Paper Award, ANTEC 1997, Society Plastics Engineers, Joining of Plastics and Composites Special Interest Group, Brookfield, CT

Significant Contribution Award, Branson Ultrasonic Corporation, a monetary award for identifying market opportunities and developing expert system. (1996)

Significant Contribution Award, Branson Ultrasonic Corporation, a monetary award for identifying a solution to plastic related problem on ultrasonic cleaners. (1994)

ACTIVITIES

Society of Plastic Engineers Chairperson to Special Interest Group Joining of Plastics and Composites (2003 to Present)

Society of Plastic Engineers Technical Chairperson to Special Interest Group Joining of Plastics and Composites (2001 to 2003)

Laser Safety Officer, Trained by Rockwell Laser Institute, April 1999.

Society of Plastic Engineers Vice-Chairperson to Special Interest Group Joining of Plastics and Composites (1999 to 2001)

Society of Plastic Engineers Secretary to Special Interest Group Joining of Plastics and Composites (1997 to 1999)

Program Organizer and Chairman for Materials Week '95 on plastics joining sessions sponsored by ASM International and TMS.

ASM International, Chairman of plastics joining committee (1995)

AWS member on plastics G1 committee (1990 to present)

Program Organizer and Chairman for Materials Week '91 on plastics joining sessions sponsored by ASM International and TMS.

PATENTS

1) *Ultrasonication in Soy Processing for Enhanced Protein and Sugar Yields and Subsequent Nisin Production*," ISURF docket #03405, ISU, April, 2006, S. Khanal, D. Grewell, J Van Leeuwen

2) *Micro-Embossing with Zero Flash* Intellectual Property Disclosure filed; ISURF Docket # 03391. ISU, March 2006, D. Grewell, S. Vengasandra, G. Harmon

3) *Ultrasonic Application to Enhance Ethanol Production from Corn Milling Operation*, Intellectual Property Disclosure filed; ISURF Docket # 03385, ISU, February 2006, S. Khanal, D. Grewell, J Van Leeuwen

4) *Apparatus and Method for Ultrasonic Debulking of Composite Laminates*, US Patent Application 0837RF-H591-PCT, D. Grewell, A. Benatar, E. Lee

5) *Laser beam shaping using liquid crystals*, US Patent 6,867,388, D. Grewell

6) *Light guide for laser welding*, US Patent 6,528,755, D. Grewell, J. Bickford D. Lovett, P. Rooney

7) *Transparent pressure bladder*, US Patent 6,486,433, D. Grewell, D. Lovett

- 8) *Distance mode control for laser welding*, US Patent 6,329,629, D. Grewell
- 9) *Laser Diode Array*, US Patent 6,205,160 D. Grewell
- 10) *Welding Method and Apparatus*, US Patent 6,064,798, D. Lovett, D. Grewell
- 11) *Welding Method and Apparatus*, US Patent 5,949,959, D. Lovett, D. Grewell
- 12) *Simultaneous Amplitude and Force Profiling During Ultrasonic Welding of Thermoplastic Workpieces*, U.S. Patent 5,855,706, D. Grewell
- 13) *Method for Processing Workpieces by Ultrasonic Energy*, U.S. Patent 5,846,377, J. Frantz, D. Grewell
- 14) *Method of Determining the Collapse of Plastic Parts*, U.S. Patent 5,788,791, D. Grewell
- 15) *Welding System and Method of Setting Welding Machine Parameters*, U.S. Patent 5,772,814, D. Grewell
- 16) *Thermoplastic Welding*, U.S. Patent 5,313,034, R. Grimm, D. Grewell, M. St. John
- 17) *Method and Apparatus for Processing Workpieces by Ultrasonic Energy*, U.S. Patent 5,658,408, J. Frantz, D. Grewell

BOOKS

- Plastic and Composite Welding Handbook, Editors; David Grewell, Avraham Benatar, Joon Park, Hanser Publications, Munich Germany, 2003
- Welding-Plastics Pocket Power, Avraham Benatar, Christian Bonten, David Grewell, Carsten Tuechert., Hanser Publications, Munich Germany, 2001

BOOK CHAPTERS

- 1) Joining of Plastics, Chapter 21 *Welding with Laser*, Jordan Rotheiser, David Grewell-editor, Hanser Publications, Munich Germany, 2004, Editor
- 2) Plastic and Composite Welding Handbook, Chapter 8 *Ultrasonic Welding*, David Grewell, Avraham Benatar, Joon Park, Hanser Publications, Munich Germany, 2003
- 3) Plastic and Composite Welding Handbook, Chapter 10 *Spin Welding*, Paul Rooney, David Grewell, Hanser Publications, Munich Germany, 2003
- 4) Plastic and Composite Welding Handbook, Chapter 11 *Radio Frequency Welding*, James Dixon, David Grewell, Hanser Publications, Munich Germany, 2003
- 5) Plastic and Composite Welding Handbook, Chapter 12 *Infrared and Laser Welding*, David Grewell, Hanser Publications, Munich Germany, 2003
- 6) Plastic and Composite Welding Handbook, Chapter 14 *Process Selection*, Joon Park, David Grewell, Hanser Publications, Munich Germany, 2003
- 7) Part Design for Assembly, Chapter on *Laser Welding*, Hanser Publications, Munich Germany, 2003

**REFEREED
JOURNAL
PUBLICATIONS**

8) Welding Handbook, Volume 3, Chapter 11, *Welding and Fusion Bonding of Plastics*, Co-Author, American Welding Society, Miami FL., 1996

1) Samir Khanala, Melissa Montalbob, J (Hans) van Leeuwena,b, Gowrishankar Srinivasanb and David Grewell, Ultrasound Enhanced Glucose Release from Corn in Ethanol Plants, *Journal of Environmental Science and Technology*, Submitted November 2006.

2) 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*, *Journal of Micromechanics and Micro-engineering*, 16, pgs 2000–2005, August 2006.

3) Lei Li, Allen Y. Yi, Chunng Huang, David A. Grewell, Avraham Benatar, Yang Chen, *Fabrication of Diffractive Optics by Use of Slow Tool Servo Diamond Turning Process*, *Optical Engineering*, Accepted August 2006.

4) David Grewell, Avraham Benatar, *Semi-Empirical Coupled Heat Flow, Squeeze Flow and Intermolecular Diffusion Model – Part 1: Determination of Model Parameters*, Submitted June 2006 to *Polymer*, Wiley Inc.

5) David Grewell, Avraham Benatar, *Semi-Empirical Coupled Heat Flow, Squeeze Flow and Intermolecular Diffusion Model – Part 2: Model Verification Using Laser Micro-welding*, Submitted June 2006 to *Polymer*, Wiley Inc.

6) David Grewell, Avraham Benatar, *Welding of Plastics, Fundamentals and New Developments*, Accepted November 2006 to *International Polymer Processing*. IPP-D-06-00051.

7) Samir Kumar Khanala, David Grewell, Shihwu Sung, J. van Leeuwena, *Ultrasound Application in Sludge Disintegration: A Review*, In press April 2007 to *Critical Reviews in Environmental Science and Technology*, Taylor & Francis, Oxfordshire, UK

8) David Grewell, Avraham Benatar, *Modeling Heat Flow for a Moving Heat Source to Describe Scan Micro-Laser Welding*, Submitted November 2006 to *Polymer Engineering Science*, Society of Plastic Engineers, Brookfield, CT

9) David Grewell, Avraham Benatar, *Comparison of Orbital and Linear Frictions Welding*, Submitted August 2006 to *Polymer Engineering and Science*, Society of Plastic Engineers, Brookfield, CT

10) David Grewell, Chunmeng Lu, James Lee, Avraham Benatar, *Experiments with Infrared Micro-Embossing of Thermoplastics*, Submitted November 2005 to *Polymer Engineering and Science*, Society of Plastic Engineers, Brookfield, CT

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

12) David Grewell, Avraham Benatar, *Experiments in Through Transmission Laser Scan Micro-Welding of Polycarbonate and Polystyrene*, Submitted to July 2005 to *Polymer Engineering and Science Publication*, Society of Plastic Engineers, Brookfield, CT

13) 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

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

15) David Grewell, *"IR-Schweissen mit 'gutartigen Pigmenten'"*, Kunststoffe/Plast Europe 10/98, Vol 88, page 1839, Munich Germany

REFEREED PROCEEDINGS

1) Maria Vlad, Jay-lin Jane, Perminus Mungara, David Grewell, Mechanical properties of soy protein isolate/soy hydrolysate plastics, *64th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2006), Society of Plastic Engineers, Brookfield, CT

2) Maria Vlad, Greg Harmon, David Grewell, Avraham Benatar, Weldability of Bio-Renewable Ultrasonic Exfoliated Nanocomposites, *64th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2006), Society of Plastic Engineers, Brookfield, CT

3) David Grewell, Avraham Benatar, Coupled Temperature, Diffusion and Squeeze Flow Model for Interfacial Healing Predictions, *64th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2006), Society of Plastic Engineers, Brookfield, CT

4) David Grewell, Avraham Benatar, Multiphysical Coupled Model; Predictions of Healing with Microwelding of Plastics, *64th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2006), Society of Plastic Engineers, Brookfield, CT

5) David Grewell, Avraham Benatar, Beam Shaping with Spatial Modulators for Laser Micro-Welding of Plastics *64th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2006), Society of Plastic Engineers, Brookfield, CT

6) David Grewell, Derek Ditmer, Derek Hansford, Avraham Benatar, Beam Shaping with Diffractive Optics for Laser Micro-Welding of Plastics, *63rd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2005), Society of Plastic Engineers, Brookfield, CT

7) Chunmeng Lu, L. James Lee, David Grewell, Avraham Benatar, Sacrificial Material Assisted Laser Welding Of Polymeric Microfluidic Devices, *63rd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2005), Society of Plastic Engineers, Brookfield, CT

8) David Grewell, Gang Zhou, James Lee, Avraham Benatar, Ed Lee, Ultrasonic Treatment of Advanced Thermoplastic Composites, *62nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2004), Society of Plastic Engineers, Brookfield, CT

9) Chunmeng Lu, Yi-Je Juang, James Lee, David Grewell, Avraham Benatar, Numerical Simulation of Laser/IR Assisted Micro-Embossing, *62nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2004), Society of Plastic Engineers, Brookfield, CT

- 10) Chunmeng Lu, James Lee, David Grewell, Avraham Benatar, Infrared Micro-embossing of Thermoplastics, *62nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2004), Society of Plastic Engineers, Brookfield, CT
- 11) David Grewell, Ryan Gneiting, Gianna Strohm, Avraham Benatar, Comparison of Control Algorithms for Ultrasonic Welding of Thermoplastics, *62nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2004), Society of Plastic Engineers, Brookfield, CT
- 12) David Grewell, Avraham Benatar, Prabhat Krishnaswamy, Welding of Recycled Thermoplastic Lumber for Structural Components, *62nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2004), Society of Plastic Engineers, Brookfield, CT
- 13) David Grewell, Avraham Benatar, Modeling Heat Flow For a Moving Heat Source to Describe Scan Micro-Laser Welding, *61st Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2003), Society of Plastic Engineers, Brookfield, CT
- 14) David Grewell, Avraham Benatar, Experiments in Micro-Welding of Polycarbonate with Laser Welding, *61st Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2003), Society of Plastic Engineers, Brookfield, CT
- 15) Chunmeng Lu, James Lee, David Grewell, Avraham Benatar, Feasibility of Selected Methods for Embossing Micro-Features in Thermoplastics, *61st Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2003), Society of Plastic Engineers, Brookfield, CT
- 16) Scott Caldwell, David Grewell, Optical Correction for Heat Buildup in the Center of TTIr Plastic Welds, *61st Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2003), Society of Plastic Engineers, Brookfield, CT
- 17) David Grewell, Karl Graff, Avraham Benatar, Experimental Evaluation of Methods for Characterization of Power Output of High Power Ultrasonic Transducers, *60th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2002), Society of Plastic Engineers, Brookfield, CT
- 18) David Grewell, Avraham Benatar, Tim Jerew, Diode Laser Microwelding of Polycarbonate and Polystyrene, *60th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2002), Society of Plastic Engineers, Brookfield, CT
- 19) David Grewell, Paul Rooney, Val Kagan, Relationship Between Optical Properties and Optimized Processing Parameters for Through-Transmission Laser Welding of Thermoplastics, *60th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2002), Society of Plastic Engineers, Brookfield, CT
- 20) David Grewell, Wilma Nijenhuis, TTIr Welding of Aliphatic Polyketone, *58th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (2001), Society of Plastic Engineers, Brookfield, CT
- 21) David Grewell, An Application Comparison of Orbital and Linear Vibration Welding of Thermoplastics, *57th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1999), Society of Plastic Engineers, Brookfield, CT

- 22) David Grewell, Avraham Benatar, A Process Comparison of Orbital and Linear Vibration Welding of Thermoplastics, *57th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1999), Society of Plastic Engineers, Brookfield, CT
- 23) David Grewell, Applications with Infrared Welding of Thermoplastics, *57th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1999), Society of Plastic Engineers, Brookfield, CT
- 24) David Grewell, An “Expert” System for Ultrasonic Welding of Plastics, *56th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1998), Society of Plastic Engineers, Brookfield, CT
- 25) David Grewell, Weldability of ABS and Testing of Weld Strength at Various Strain Rates; A Study in Ultrasonic Welding, *55th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1997), Society of Plastic Engineers, Brookfield, CT
- 26) David Grewell, Amplitude and Force Profiling: Studies in Ultrasonic Welding of Thermoplastics, *54th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1996), Society of Plastic Engineers, Brookfield, CT
- 27) David Grewell, Ultrasonic Weld Quality Predictions: Feasibility Study on Statistical Modeling, *53rd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1995), Society of Plastic Engineers, Brookfield, CT
- 28) David Grewell, Jeff Frantz Amplitude Control in Ultrasonic Welding of Thermoplastics, *52nd Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1994), Society of Plastic Engineers, Brookfield, CT
- 29) David Grewell, Feasibility Study for the Use of Ultrasonic NDI as a Melt Detection in Heated Tool Welding of PE, *51st Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1993), Society of Plastic Engineers, Brookfield, CT
- 30) David Grewell, Preliminary Evaluation of Ultrasonic Welding of Liquid Crystal Polymers, *50th Annual Technical Conference for the Society of Plastic Engineers Proceedings* (1992), Society of Plastic Engineers, Brookfield, CT

OTHER PUBLICATIONS

- 1) David Grewell, Avraham Benatar, Coupled Temperature, Diffusion and Squeeze Flow Model for Interfacial Healing Predictions, *Topcon* (2006), Society of Plastic Engineers, Brookfield, CT
- 2) David Grewell, etal, *Specification for the Qualification of Plastics Welding Inspectors for Hot Gas*, Hot Gas Extrusion, and Heated Tool Butt Thermoplastic Welds, ANSI Standard, AWS G1.6:2006
- 3) David Grewell, etal, *Guide to Ultrasonic Assembly of Thermoplastics*, ANSI Standard, AWS G1.1M/G1.1:2006
- 4) David Grewell, Avraham Benatar, Beam Shaping with Spatial Modulators for Laser Micro-Welding of Plastics, *Topcon* (2006), Society of Plastic Engineers, Brookfield, CT
- 5) Maria Vlad, Jay-lin Jane, Perminus Mungara, David Grewell, Mechanical properties of soy protein isolate/soy hydrolysate plastics, GPEC 2006 Conference, Society of Plastics Engineers, Brookfield, CT

- 6) David Grewell, Avraham Benatar, Derek Ditmer, Derek Hansford Beam Shaping With Diffractive Optics For Laser Micro-Welding Of Plastics, Proceedings of Annual Conference (2005), The American Society for Precision Engineering, Raleigh, NC
- 7) David Grewell, Avraham Benatar, Modeling Heat Flow for a Distributed Moving Heat Source in Micro-Laser Welding of Plastics, Proceedings of the 8th International on Numerical Methods in Industrial Forming Processes, American Institute of Physics (2003), College Park, MD
- 8) David Grewell, Avraham Benatar, *Comparison of DVS weld sample and AWS weld Sample*, IIW Document (1997)
- 9) David Grewell, Laser Vibrometers in Ultrasonic Welding of Thermoplastics, *1st International Conference on Vibration Measurements by Laser Techniques Conference Proceeding* (1994), Italian Association of Laser Velocimetry, Ancona, Italy
- 10) David Grewell, Welding of Thermoplastics, IBM/Windows based artificial intelligence software for down selecting a joining technique for thermoplastics, Columbus, OH (1993)
- 11) David Grewell, Guidelines for Hot Plate Welding, The Plastic Distributor, January/February 1992, Riverside IL
- 12) David Grewell, *Improving Ultrasonic Welding for Industry*, Presentation at 23rd Annual Ultrasonic Industry Association (1992), Columbus OH
- 13) David Grewell, Robert Grimm, *Engineering Thermoplastics as Bonding Agents*, Research Report B9102, Edison Welding Institute, Columbus, OH, (March 1991)

PRESENTATIONS INVITED LECTURES

- David Grewell, *Ultrasonic and its application in environment, energy and biotechnology*, 2006 Asian Institute of Technology Thailand
- David Grewell, Weldability Of Biorenewable Ultrasonic Exfoliated Nanocomposites, 2006 BASF Germany
- David Grewell, Ultrasonic Enhancement of Bio-renewable Fuels, 2006 Emerson Electric Germany
- David Grewell, Fabrication with polymers for today's technological demands; Fundamental, modeling and micro-fabrication, 2006 University of Erlangen Germany-2 day seminar
- David Grewell, Fabrication with polymers for today's technological demands; Fundamental, modeling and micro-fabrication, 2006 University of Paderborn Germany
- David Grewell, Wilma Nijenhuis, TTIr Welding of Aliphatic Polyketone, Society of Plastic Engineers, IIW Annual Assembly (July 2000), Florence, Italy
- David Grewell, Controlling Amplitude During the Ultrasonic Welding of Thermoplastics, Presentation at 10th Annual Meeting of The Polymer Processing Society (1994), Akron OH

INTEREST

Earned private pilot's license in 1983. Enjoy flying, tennis, wood working, kite flying and fishing.

REFERENCES

Avi Benatar, Associate Professor
The Ohio State University
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Don Lovett, Director of Advanced R&D
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