



John Vlachopoulos concluding his plenary lecture on polymer film extrusion at AWPP in Kenting, Taiwan (November 2014)

CURRICULUM VITAE

John Vlachopoulos

January 2016

BRIEF CV

JOHN VLACHOPOULOS received his DIPL. CHEM. ENG . Degree (1965) from the National Tech. Univ of Athens Greece and M.S. (1968) and D.Sc.(1969) degrees from WASHINGTON UNIV. in St.Louis, Mo. USA. He was Assistant Professor of Chemical Engineering (1968-1974), Associate Professor (1974-1979), (Full) Professor from 1979 -2007 and Professor Emeritus from 2008 to present, at McMaster University, in Hamilton, Ontario Canada. He has spent sabbatical research leaves at the Institut für Kunststofftechnologie (IKT), University of Stuttgart, Germany (5 months,1975), Centre de Mise en Forme des Matériaux (CEMEF), Ecole des Mines de Paris, Sophia Antipolis, France, (11 months, 1981-82 and 7 months 1988-89)

He is the author of 134 refereed journal publications, over 90 refereed conference papers, 18 chapters in various books and he has co- edited or published 6 books/ lecture notes. He is consultant to the polymer processing industry, member of several international professional organizations (Past-President (2005-2007) of the Polymer Processing Society (PPS)) and frequent lecturer at conferences and seminars around the world in English, French, German, Greek, Spanish, Portuguese and Italian. He is also the recipient of the SPE Fred E. Schwab award for Outstanding Achievement in Plastics Education (Dallas, TX, 2001), the Distinguished Achievement in Extrusion Award (Chicago, Ill., 2004) from the Society of Plastics Engineers (SPE), the Stanley G. Mason Award of the Can. Soc. of Rheology (Hamilton, ON, 2007) and the Bruce Maddock Award of the extrusion Division of SPE (Las Vegas, 2014). He is Fellow of the Chemical Institute of Canada (CIC), Fellow of the Society of plastics engineers (SPE0 and Fellow of the Canadian Society of Engineering (CAE).

Soon after arriving at McMaster University in 1968, John Vlachopoulos focused the research efforts of his team of graduate students, research staff and postdoctoral fellows on polymer processing and rheology. He formed the Centre for Advanced Polymer Processing and Design (CAPPA-D) in 1987. His former students and coworkers are now university professors or occupy important positions in industry in Canada, USA, Latin America, Europe and the Far East. Special emphasis was placed on rheological characterization of polymers, on developing mathematical models and solving problems of industrial relevance and importance, using finite element and finite difference methods. The most important research accomplishments and projects include:

1. POLYMER EXTRUSION INSTABILITIES: Relations involving molecular weight distribution and elucidation of the role of molecular disentanglements on extrudate swell and melt fracture phenomena.
3. SCREW EXTRUSION OF PLASTICS: Models of the entire plasticating single screw extrusion process from hopper to die exit and applications to screw design, as well in simulation of peroxide degradation for the production of controlled rheology PP. Extruder screw design methodologies.
4. DIE FLOW SIMULATION AND DESIGN: Simulation of flow through dies for the production of cast film, sheet, blown film, profiles and development of computer assisted methodologies for design of flat, spiral and profile dies using 2-D models of non-Newtonian polymer flow. Study of special problems in multilayer extrusion using 3-D simulations.
2. CALENDERING: Models with and without the hydrodynamic lubrication approximation involving wall slip and normal stress effects. Prediction of forces, pressures, torques and the

existence of vortices in the melt bank.

5. **FOUNTAIN FLOW IN INJECTION MOLDING:** First ever published simulation of this phenomenon as well as elucidation of the role of kinematics, shear thinning and viscoelasticity, explanation of the origin of V-shapes and other effects during the cavity filling process.
6. **THERMOFORMING:** Finite element simulation of polymer sheet inflation involving hyperelastic and viscoelastic constitutive equations with and without the membrane approximation.
7. **PARTICLE COALESCENCE (SINTERING):** Frenkel's 1945 model, which was applicable to the very early stages of the process, was extended for the first time to full completion and inclusion of viscoelasticity. Experimental verification was carried out in specially developed particle sintering apparatus.
8. **ROTATIONAL MOLDING:** Development of rheological characterization techniques and observations of melt densification under a microscope for the determination of rotomoldability of resins including foams.
9. **BLOWN FILM EXTRUSION:** Elucidation of interactions between polymer rheology and the aerodynamics of cooling by turbulent impinging air jets, including the Venturi and Coanda effects. Study of external single and dual orifice cooling jets and internal bubble cooling (IBC).
10. **PLASTIC WOOD COMPOSITES EXTRUSION:** First ever published studies of the skin and edge tearing phenomenon that appears as some sort of exaggerated sharkskin. Detailed rheological studies of heavily filled polymers and study of wall slip phenomena.
11. **APPLIED RHEOLOGY:** Rheological characterization, rheology of biodegradable polymers, rheology of composites including carbon nanotubes.

The research efforts led to the development of several software packages which are licensed through a spin-off, POLYDYNAMICS, INC. (www.polydynamics.com and a subsidiary in Japan). These have been or continue to be used in industry for routine equipment design, process optimization and troubleshooting purposes (in more than 500 corporations in 30 countries around the world). Dr. Vlachopoulos has served as consultant to several hundred corporations on problems relating to equipment design, optimization of extrusion troubleshooting of various other polymer processing operations and as expert witness in patent infringement and product litigation. He has presented his intensive short course (2-4 days) on polymer rheology and processing 72 times in 17 countries thus far, with total attendance reaching about 2000 polymer professionals.

Curriculum Vitae

JOHN VLACHOPOULOS

Professor Emeritus

Centre for Advanced Polymer Processing and Design (CAPPA-D)
Department of Chemical Engineering
McMaster University
1280 Main Street West- JHE 374
Hamilton, Ontario, Canada L8S 4L7
Telephone: +1 (905) 5923507 (Private office)
Telephone: +1(905) 5259140, Ext. 24954 (University office)
FAX: +1 (647) 4367847
E-mail: vlachopj@mcmaster.ca

EDUCATION

1960-1965	Nat. Tech. Univ. (EMP), Athens, Greece (DIPL.CHEM. ENG. 1965)
1965-1968	Washington University, St. Louis, MO, U.S.A. (M.S. 1968; D.Sc. 1969) Doctoral Dissertation Title: "Heat and Momentum Transfer in the Compressible Turbulent Wall Jet" 202 pages

LANGUAGES with ability to lecture:

English, Greek (mother tongue), German (fluent), French (fluent), Spanish (fluent), Italian (proficient) and Portuguese (functional)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- Prof. Eng. Ontario (PEO) – Canada
- C.I.C.-C.S.Ch.E., Can. Soc. Rheology (Past President) – Canada
- A.I.Ch.E. – (USA)
- Soc. Rheol. (SOR) – (USA)
- Soc. Plast. Eng. (SPE) - USA/International
- Polym. Proc. Soc. (PPS) –International (Past President)
- Hellenic Society of Rheology (HSR) – (Greece)
- Verein Deutscher Ingenieure (VDI) – (Germany)

HONOURS AND AWARDS

- 1 Fellow (FCIC), Chemical Institute of Canada (since 1985)
- 2 Fellow (FSPE), Society of Plastics Engineers (since 2001)
- 3 Fellow (FCAE), Canadian Society of Engineering (since 2014)
- 4 Received the 2001 Fred E. Schwab Award for outstanding achievements in education, from the Society of Plastics Engineers, during the Annual Technical Meeting in Dallas, Texas, USA.
- 5 Received the 2004 Distinguished Achievement Award of the Extrusion Division of S.P.E. (“in recognition of his contributions to the plastics industry”) during the Annual Technical Meeting in Chicago, Illinois, USA.
- 6 Received the S.G. Mason Award for outstanding contributions to rheology, from the Canadian Society of Rheology, Hamilton, Ontario, Canada, (2007).
- 7 Received the Bruce Maddock Award, of the Extrusion Division of SPE, for contributions to single screw extrusion fundamentals.

EMPLOYMENT HISTORY

Summer 1963	G.B.A.G., Gelsenkirchen, Germany
Summer 1964	B.A.S.F., Ludwigshafen, Germany
1965 – 1968	Research and Teaching Assistant, Chemical Engineering Department, Washington University
1968 – 1974	Assistant Professor, Department of Chemical Engineering, McMaster University
1974 – 1979	Associate Professor, Department of Chemical Engineering, McMaster University
1979 – 2007	(Full) Professor, Department of Chemical Engineering, McMaster University
1985 – 1988	Chairman, Department of Chemical Engineering, McMaster University
2008 – Present	Professor Emeritus, McMaster University
1987 – 2014	Director, Centre for Advanced Polymer Processing and Design (CAPPA-D), member of McMaster Manufacturing Research Institute (MMRI)
Research Leave I	(a) January–June 1975; Institut für Kunststofftechnologie (IKT), University of Stuttgart, Federal Republic of Germany
	(b) June–July 1975; École d’Application des Hauts Polymères, Université de Strasbourg, France
Research Leave II	September 1981–July 1982; Centre de Mise en Forme des Matériaux, École N.S. des Mines de Paris, Sophia Antipolis, Valbonne, France
Research Leave III	September 1988–March 1989; Centre de Mise en Forme des Matériaux, École N.S. des Mines de Paris, Sophia Antipolis, Valbonne, France
1994 – Present	President, POLYDYNAMICS, Inc. (www.polydynamics.com)

SCHOLARLY AND PROFESSIONAL ACTIVITIES

- Consultant to process and polymer industry, licensor of software packages and expert witness in legal disputes involving patent litigation and product liability.
Consulting contracts and software licensing agreements include: Falconbridge Nickel Mines (Canada), Rohm and Haas (USA), Alcan (Canada), American National Can (USA), Egan Machinery (USA), Samuel Strapping Systems (Canada), Brampton Engineering (Canada), Eastman Kodak (USA), Extrusion Dies Inc. (USA), Neste Polyeten (Sweden), Mitsubishi Petrochemical (Japan), Mitsubishi Plastics (Japan), Mitsubishi Kasei (Japan), Royal Institute of Technology (Sweden), Tetra Pak (Sweden), Monsanto (USA), Hercules (USA), Mobil Chemical (USA), Viskase (USA), U. St. Etienne (France), Ube (Japan), Ford Motor Company (USA), Dow Chemical (USA), BICC Cables (USA), Black Clawson Sano (USA), Boston Scientific (USA), Cryovac (USA), E.I. DuPont de Nemours (USA), Nicholas Plastics (USA), Nordson Corporation (USA), Velcro (USA), OM Industries (Canada), Hanwha Chemical Corp. (Korea), Borealis (Norway), Progress Precision (Canada), Xerox (Canada), Corma (Canada), Nitta Casings (USA) and several other corporations totalling over 500, in 30 countries.
- Member of the Editorial Board of Advances in Polymer Technology.
- Member of the Editorial Board of International Polymer Processing (PPS).
- Member of Advisory Board of Progress in Polymer Processing (PPS, Hanser Publishers)
- Regular journal referee: C.J.Ch.E., A.I.Ch.E.J., Polym. Eng. Sci., J. Rheol., J. Appl. Polym. Sci., Chem. Eng. Comm., Adv. Polym. Tech., Rubb. Chem. Tech., J. Non-Newt. F.M., Intern. Polym. Proc., Num. Meth. Heat Transf., Chem. Eng. Sci.....(over 25 journals)
- Reviewer of research proposals for NSERC (Canada), Canada Council, FCAR-FQRNT (Quebec, Canada), NSF (USA), NATO, Ministry of Research and Technology (Greece), Technology Fund (Ontario, Canada), Petroleum Research Fund (USA), Research funding organizations in Australia, U.K., The Netherlands, Czech Republic, Ukraine, Portugal and Saudi Arabia.
- Member of Selection Committee for the Government of Canada awards to foreign nationals (1975-1978)
- External Ph.D. Thesis examiner for several universities: U. Toronto, U. Waterloo, McGill, École Polytechnique, U. Alberta, U. British Columbia, Indian Institute of Technology (Madras,India), Ecole N.S. Mines Paris (France), U. Sydney (Australia), Tech. U. Brno (Zlin-Czech Republic), RMIT (Melbourne, Australia), U. of Western Ontario, U. of Belfast (Northern Ireland), U. do Minho (Portugal), U. Duisburg-Essen (Germany), U. Lyon (France), Ecole National Superieure d'Arts et Metiers (Paris, France)
- Session Chairman: in several national and international conferences.
- Chairman, Symposium on Quantitative Characterization of Plastics and Rubber, McMaster University, June 1984 (Attendance 80).
- Course Director and Principal Lecturer, Intensive Short Courses on Polymer Rheology and Processing in Canada, Greece, Venezuela, Sweden, Finland, Czech Republic, U.S.A., Australia, Belgium, Brazil, Japan, Germany, Italy, Mexico, The Netherlands and Luxembourg (cumulative attendance about 2000). Offered 2-4 times per year in different parts of the world (over70 times since 1987).
- Chairman, Canadian Rheology Group (now Canadian Society of Rheology) (1986-88).
- Chairman, Organizing Committee of the 7th Annual International Meeting of the Polymer

- Processing Society (PPS), Hamilton, Ontario, April 1991 (Attendance about 400, from 23 countries).
- President, Polydynamics, Inc., a spin-off company engaged in software research, development, and consulting in plastics processing, since 1994.
 - Co-organizer, OCMR Workshop on Die Design, Toronto, Ontario, June 1995 (attendance 70).
 - Organizer, Workshop on Rotomolding, McMaster University, Hamilton, Ontario, May 1995 (attendance 40).
 - Member, Board of Directors, Extrusion Division of the Society of Plastics Engineers (SPE) 1997–2003.
 - Chair, Organizing Committee, North American Meeting of the Polymer Processing Society (PPS), Toronto, August 1998 (attendance about 145).
 - Chair, PPS Membership Committee, 1999–present.
 - Member, Organizing Committee, 3rd Pacific Rim Rheology Conference, Vancouver, B.C. (2001).
 - Member, Organizing Committee, US/Canada Plastics Alliance (Niagara-on-the-Lake, ON meeting, April 1999).
 - Nanocomposites RCE Selection Panel, NSF, Washington, DC (July 2002).
 - President, Polymer Processing Society (2005-2007).
 - Member of the Industrial Advisory Board of Medical Plastics Research Institute (MPRI), Queen's University of Belfast, N. Ireland (2004-2006).
 - Soc. Plastics Eng. (SPE) member of SPE Fellows election committee (since 2008), SPE Education award committee (since 2009)
 - Polymer Processing Society (PPS), J. L. WHITE Innovation Award selection Committee (since 2010)

RESEARCH AREAS OF INTEREST

- POLYMER PROCESSING AND RHEOLOGY
- CAD/CAM METHODS IN PLASTICS PROCESSING
- FLUID FLOW and HEAT TRANSFER in PROCESS INDUSTRIES

CENTRE FOR ADVANCED POLYMER PROCESSING AND DESIGN (CAPPA-D)

John Vlachopoulos is the founder and Director of this research centre which was established in 1987 and is officially recognized by the McMaster University Senate. Membership includes four faculty members, postdoctoral fellows, research engineers and graduate students working in the areas of processing of polymers (extrusion, injection molding, rotomolding, thermoforming, and plastics recycling).

UNIVERSITY COURSES TAUGHT

Fluid Mechanics (both at undergraduate and graduate level)
Heat Transfer (undergraduate)
Mass Transfer (undergraduate)
Polymer Rheology (graduate)
Polymer Processing (undergraduate/graduate)
Extrusion Systems Design (undergraduate)

PUBLICATIONS**Books and Lecture Notes**

7. J. Vlachopoulos "Lecture Notes on Polymer Rheology and Extrusion", over 400 pages, updated annually for the International Intensive Short Course presentation (1987-2015, 73 times in 16 countries), organized by Polydynamics, Inc.
6. J. Vlachopoulos "Fundamentals of Fluid Mechanics", 750 pages, McMaster University, Hamilton, ON, Canada (1985). Revised (1994, 2002, 2015); soon to appear on-line at www.polydynamics.com.
5. J. Vlachopoulos and J.R. Wagner (Editors), "The SPE Guide on Extrusion Technology and Troubleshooting", 413 pages, Society of Plastics Engineers (SPE), Brookfield, CT, USA (2001).
4. J. Vlachopoulos, "Fundamentals of Fluid Mechanics", 750 pages, McMaster University, Hamilton, ON, Canada (1985). Revised (1994, 2002, 2015) soon to appear on-line at www.polydynamics.com.
3. J.A. Covas, J.F. Agassant, A.C. Diogo, J. Vlachopoulos and K. Walters (Editors) "Rheological Fundamentals of Polymer Processing", 463 pages, NATO ASI Series, Kluwer, Dordrecht, The Netherlands (1995).
2. J. Vlachopoulos, "Introduction to Plastics Processing", over 150 pages, Lecture Notes, Department of Chemical Engineering, McMaster University (1993-2005).
1. J. Vlachopoulos (Editor) "Quantitative Characterization of Plastics and Rubber", 156 pages, Symposium Proceedings, McMaster University (1984)

Book Chapters

18. J. Vlachopoulos and V. Sidiropoulos "Die Flow Analysis and Mathematical Modeling of Film Blowing" in T. Kanai and G.A. Campbell (Editors) "Film Processing Advances" Hanser Verlag, Chapter 4, 111-132, Munich (2014)
17. J. Vlachopoulos, R. Castillo, N. Polychronopoulos, S. Tanifuji, "Blown Film Dies", Chapter 5 in O.S. Carneiro and M. Nobrega (Eds.) "Design of Extrusion Forming Tools",

- Smithers – Rapra, London, 141-167 (2012).
16. J. Vlachopoulos, N. Polychronopoulos S. Tanifuji, J.P. Müller “Flat Film and Sheet Dies”, Chapter 4 in O.S. Carneiro and M. Nobrega (Eds.), “Design of Extrusion Forming Tools”, Smithers – Rapra, London, 113-140 (2012).
 15. J. Vlachopoulos and N. Polychronopoulos, “Basic Concepts in Polymer Melt Rheology and their Importance in Processing”, Chapter 1, pages 1-27 in M. Kontropoulou (Ed.), “Applied Polymer Rheology”, Wiley (2012).
 14. J. Vlachopoulos and D. Strutt, "Rheology of Molten Polymers", Chapter 5, pages 57-72, in J.R.Wagner (Ed.), "Multilayer Flexible Packaging", Elsevier, Amsterdam (2010).
 13. J. Vlachopoulos and D. Strutt, "Heat Transfer", in SPE Plastics Technicians Toolbox, 2, 21-33 (2002).
 12. J. Vlachopoulos and V. Sidiropoulos, "Polymer Film Blowing: Technology and Modelling", Encycl. of Mat. Sci. & Tech., 7296-7101 Elsevier (2001).
 11. J. Vlachopoulos, "Computer-Aided Polymer Processing Analysis and Design", Can. Chem. News, 29-30, September 2000.
 10. M. Kontropoulou and J. Vlachopoulos, "Sintering of Polymeric Powders: Analogies Between Polymer Processing and Materials Science", *Metalleiologika Metal. Chronika*, Vol. 9(1-2), 203-222 (1999), Athens, Greece.
 9. J. Perdikoulis, J. Vlachopoulos and J. Vlcek, "Spiral Die Analysis", Chapter 2.2, pp. 39-57 in "Film Processing", T. Kanai and C.A. Campbell (Eds.), Hanser, Munich, Germany (1999).
 8. A.T.P. Zahavich and J. Vlachopoulos, "Reprocessing of Polyolefins", 271-297 in "Frontiers in the Science and Technology of Polymer Recycling", G. Akovali, C.A. Bernardo, J. Leidner, L. A. Utracki and M. Xanthos (Eds.), NATO ASI Series, Kluwer, Netherlands (1998).
 7. B.L. Koziy, M.O. Ghafur, J. Vlachopoulos and F.A. Mirza, Computer Simulation of Thermoforming, 75-89, in D. Bhattacharyya (Ed.), Elsevier, Amsterdam (1997).
 6. A. Karagiannis, A.N. Hrymak, J. Vlachopoulos and J. Vlcek, "Coextrusion of Polymer Melts", Chapter in J.A. Covas et al (Eds.), "Rheological Fundamentals in Polymer Processing", Kluwer, NATO ASI Series, Dordrecht, The Netherlands (1995).
 5. M.O. Ghafur, B. Koziy and J. Vlachopoulos, "Simulation of Thermoforming and Blowmolding: Theory and Experiments", 321-383 in "Rheological Fundamentals in Polymer Processing", J.A. Covas et al (Eds.), NATO ASI Series, Kluwer, Netherlands (1995).
 4. J. Vlachopoulos, N. Silvi and J. Vlcek, "POLYCAD A Finite Element Package for Molten Polymer Flow", Chapter 4, in K.T. O'Brien (Ed.), "Application of CAE in Extrusion and Other Continuous Processes", 85-102, Hanser, Munich, Germany (1992)

3. J. Vlcek, J. Perdikoulis and J. Vlachopoulos, "Extrusion Die Flow Simulation and Design with FLATCAD, COEXCAD and SPIRALCAD", Chapter 10, in K.T. O'Brien (Ed.), "Application of CAE in Extrusion and Other Continuous Processes", 487-504, Hanser, Munich, Germany (1992).
2. J. Vlachopoulos and E. Mitsoulis, "Fluid Flow and Heat Transfer in Calendering", Chapter in Transport Phenomena in Polymeric Systems (R.A. Mashelkar, Editor), 79-104, Ellis Horwood/Halsted/Wiley (1989).
1. J. Vlachopoulos, "Calendering", Encyclopedia of Materials Science and Engineering, M.B. Bever (Ed.), 485-487, Pergamon Press (1986).

Refereed Journal Papers

135. M. Emami, M.R. Thompson and J. Vlachopoulos and E. Maziers "Examining the Influence of Production Scale on the Volume Expansion Behavior of Polyethylene Foams in Rotational Foam Molding" *Adv. Pol. Tech.*, 34, DOI 21507 (8 pages)(2015)
134. E. Emami, M.R. Thompson and J. Vlachopoulos "Experimental and Numerical Studies on Bubble Dynamics in Non-Pressurized Foaming Systems" *Polym. Eng. Sci.*, 54, 1947-1959, (2014)
133. M. Emami, M.R. Thompson and J. Vlachopoulos "Bubble Nucleation in Non-Pressurized Polymer Foaming Systems", *Polym. Eng. Sci.*, 54, 1201-1210 (2014)
132. A. Goger, J. Vlachopoulos, M.R. Thompson "Negative Pressures in Modeling Rotating Polymer Processing Machinery Are Meaningless, But They Are Telling Something" *Intern. Polym. Proc.*, 29, 295-297 (2014).
131. M. Thompson, B. Mu, C.M. Ewachuk, Y. Cai, K.J. Oxby and J. Vlachopoulos "Long Term Storage of Biodiesel/ Petrol Diesel blends in Polyethylene Fuel Tanks" *Fuel*, 108, 771-779 (2013)
130. P. Michelis and J. Vlachopoulos "Complete CNT Disentanglement-Dispersion-Functionalisation a Pulsating Micro-Structured Reactor" *Chem. Eng. Sci.*, 90, 10-16 (2013)
129. M. Emami, E. Takacs, M.R. Thompson and J. Vlachopoulos, "Visual Studies of Model Foam Development for Rotational Molding Processes" *Adv. Polym. Tech.*, 32, E809-E821 (2013).
128. M. Emami, E. Takacs and J. Vlachopoulos, "Rotational Foam Molding of Metallocene Catalyzed Polyethylene: CBA Screening and Process Characteristics", *J. Cell. Plast.*, 46(4), 333-351 (2010).
127. R. Elsheref, J. Vlachopoulos and A. Elkamel, "Comparison and Analysis of Bubble Growth

- and Foam Formation Models”, *Engin. Computations*, 27(3-4), 387-408 (2010).
126. C.R.Santi, E. Hage, J.Vlachopoulos and C.A.Correa, “Rheology and Processing of HDPE/ Wood Flour Composites” *Intern. Polym. Proc.*, 24, 346-353 (2009).
 125. C.R. Santi, E. Hage Jr., C.A. Correa and J. Vlachopoulos, "Torque Viscometry of Molten Polymers and Composites", *Appl. Rheol.*, 19(1), 10-16 (2009)
 124. E.S. Takacs and J. Vlachopoulos, "Biobased, Biodegradable polymers for Biomedical Applications: Properties and Processability", *Plast. Engineer.*, 64(9), 28-23, Oct. 2008.
 123. V. Hristov and J. Vlachopoulos, "Effects of Polymer Molecular Weight and Filler Particle Size on Flow Behavior of Wood Polymer Composites", *Polym. Compos.*, 29, 831-829 (2008).
 122. D. Kanev, E. Takacs and J. Vlachopoulos, "Rheological Evaluation and Observations of Extrusion Instabilities of Biodegradable Polyesters", *Inter. Polym. Proc.*, 22, 395-401 (2007).
 121. V. Hristov and J. Vlachopoulos, "A Study of Entrance Pressure Loss in Filled Polymer Melts", *Appl. Rheol.*, 17(5), 57191 (9 pages) (2007).
 120. V. Hristov and J. Vlachopoulos, "Thermoplastic Silicone Elastomer Lubricant in Extrusion of Polypropylene Wood Flour Composites", *Adv. Polym. Tech.*, 26, 100-108 (2007).
 119. V. Hristov and J. Vlachopoulos, "Influence of Coupling Agents on Melt Flow Behavior of Natural Fiber Composites", *Macrom. Mat. Eng.*, 292, 608-619, (2007).
 118. V. Hristov and J. Vlachopoulos, "A Study of Viscoelasticity and Extrudate Distortions of Wood Polymer Composites", *Rheol. Acta*, 46, 773-783 (2007).
 117. V. Hristov, E. Takacs and J. Vlachopoulos, "Surface Tearing and Wall Slip Phenomena in Extrusion of Highly Filled HDPE/Wood Flour Composites", *Polym. Eng. Sci.*, 46, 1204-1214 (2006).
 116. H.J. Larrazabal, A.N. Hrymak and J. Vlachopoulos, "On the Relationship Between the Work of Adhesion and the Critical Shear Stress for the Onset of Flow Instabilities", *Rheol. Acta*, 45, 705-715 (2006).
 115. H.J. Larrazabal, A.N. Hrymak and J. Vlachopoulos, "Effect of the Chemical and Morphological Conditions of the Die Wall on the Extrusion of Linear Polyolefins", *Intern. Polym. Proc.*, 21, 132-140 (2006).
 114. V. Sidiropoulos and J. Vlachopoulos, "Temperature Gradients in Blown Film Bubbles", *Adv. Polym. Techn.*, 24, 83-90 (2005).
 113. A. Tinson, E. Takacs and J. Vlachopoulos, "The Role of Surface Tension in Sintering for Rotational Molding”, *Rotoworld*, 1, 43-47 (2005).
 112. A. Torres, A. Hrymak, J. Vlachopoulos, D. Moran and Z. DaFonseca, "The Fast and Efficient

- Simulation of 3D Creeping Flow in Ducts Using a Space Matching Algorithm", *Polym. Eng. Sci.*, 45, 249-259 (2005).
111. M. Thompson, C. Xi, E. Takacs, M. Tate and J. Vlachopoulos, "Experiments and Flow Analysis of a Micropelletizing Die", *Polym. Eng. Sci.*, 44, 1391-1402 (2004).
 110. D. D'Agostino, E. Takacs and J. Vlachopoulos, "Foaming with Polymer Microspheres in Rotational Molding: The Effect of Coupling Agent", *J. Cell. Plast.* 40, 61-75 (2004).
 109. V. Sidiropoulos and J. Vlachopoulos, "The Aerodynamics of Blown Film Cooling", *Jap. Soc. Polym. Proc. Journal (Seikei Kaku)*, 15, 740-744 (2003).
 108. J. Vlachopoulos and D. Strutt, "Overview: Polymer Processing", *Mat. Sci. Tech.*, 19, 1153-1160 (2003).
 107. A. Greco, A. Mafezzoli and J. Vlachopoulos, "Simulation of Heat Transfer During Rotational Molding", *Adv. Polym. Tech.*, 22, 271-279 (2003).
 106. V. Sidiropoulos and J. Vlachopoulos, "Numerical Simulation of Blown Film Cooling", *J. Reinf. Plast. Comp.*, 21, 629-637 (2002).
 105. B.I. Chaudhary, E. Takacs and J. Vlachopoulos, "Ethylene Copolymers as Sintering Enhancers and Impact Modifiers for Rotational Molding of Polyethylene", *Polym. Eng. Sci.*, 42, 1359-1369 (2002).
 104. B.I. Chaudhary, E. Takacs and J. Vlachopoulos, Processing Enhances for Rotational Molding of Polyethylene, *Polym. Eng. Sci.*, 41, 1731-1742 (2001).
 103. V. Sidiropoulos and J. Vlachopoulos, A Numerical Study of Internal Bubble Cooling (IBC) In Film Blowing@, *Intern. Polym. Proc.*, 16, 48-53 (2001).
 102. M. Kontopoulou and J. Vlachopoulos, "Melting and Densification of Thermoplastic Powders", *Polym. Eng. Sci.*, 155-169, 41 (2001).
 101. V. Sidiropoulos and J. Vlachopoulos, "The Effects of Dual-Orifice Air-Ring Design on Blown Film Cooling", *Polym. Eng. Sci.*, 40, 1611-1618 (2000).
 100. V. Sidiropoulos and J. Vlachopoulos, "An Investigation of Venturi and Coanda Effects in Blown Film Cooling", *Intern. Polym Proc.*, 15, 40-45 (2000).
 99. M. Kontopoulou, E. Takacs and J. Vlachopoulos, "An Investigation of the Bubble Formation Mechanism in Rotational Molding", *Rotation*, 28-33 (January 2000).
 98. J. Vlachopoulos, M. Kontopoulou, E. Takacs and B.A. Graham "Polymer Rheology and Its Role in Rotational Molding", *Rotation*, 22-30 (November 1999).
 97. V. Sidiropoulos, P.E. Wood and J. Vlachopoulos, "The Aerodynamics of Cooling of Blown Film Bubbles", *J. Reinf. Plast. Comp.*, 18, 529-538 (1999).

96. M. Kontopoulou and J. Vlachopoulos, "Bubble Dissolution in Molten Polymers and Its Role in Rotational Molding", *Polym. Eng. Sci.*, 39, 1189-1999 (1999).
95. A. Rincon, A.N. Hrymak and J. Vlachopoulos, "Transient Finite Element Analysis of Generalized Newtonian Coextrusion Flows in Complex Geometries", *Intern. J. Num. Meth. Fluids*, 28, 1159-1981 (1998).
94. A.N. Hrymak and J. Vlachopoulos, "Simulation of Coextrusion Flows of Polymer Melts", Seikei Kakou, *Journal of the Japan Soc. Polym. Proc.*, 10, 695-704 (1998).
93. C. Bellehumeur, M. Kontopoulou and J. Vlachopoulos, "The Role of Viscoelasticity in Polymer Sintering", *Rheol. Acta*, 37, 270-272 (1998).
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15. E. Mitsoulis, J. Vlachopoulos and F.A. Mirza, "Finite Element Analysis of Calendering", Proc. IAMM, 430-434, Zurich, Aug. 1983.
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 6. J. Vlachopoulos and C. Kiparissides, "An Analysis of Thermoplastics Calendering", 26th Can. Ch.E. Conf., Poster Session Preprints, paper 3D, Toronto, (1976).
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 4. A.A. Harms, W.J. Garland, W.A. Pearce, M.F. Harding, O.A. Trojan, and J. Vlachopoulos, "Multiple Temporal-Mode Analysis for the Three-Dimensional Reactor Dynamics", Proc. NEACRP/CNS/T.U. München, p. 75 (March 1975).
 3. W.J. Garland, J. Vlachopoulos and A.A. Harms, "A Summation Exponent Analysis for Space-Dependent Reactor Transients", Trans. Am. Nucl. Soc., 18, 323 (1974).
 2. J. Vlachopoulos, J. Larocque, J.S.-J. Ho, "Numerical Studies of Non-Newtonian Fluid Flow and Heat Transfer", Proc. Symp. Heat Transfer in Plastics Processing, U. Bradford (1974) U.K., Paper 5.
 1. J. Vlachopoulos, "Some New Results on Compressible Turbulent Impinging Jets of Hot Air", Proc. 3rd CANCAM, 573, Calgary, 1971.

Major Confidential Reports (Consulting Projects)

Effective July 1994: All major consulting projects are handled by POLYDYNAMICS, INC., a spin-off company owned by J. Vlachopoulos. (Several major confidential reports have been prepared in cooperation with POLYDYNAMICS, Inc. Staff: B. Koziey, N. Smith, D. Strutt, V. Sidiropoulos and N. Polychronopoulos)

8. B. Koziey, M. Bisaria, E. Takacs, J. Patry, J. Cabak and J. Vlachopoulos, "Automotive Carpet Thermoforming", 130 pages, Prepared for Masland Industries, Mississauga, Ontario (1994).

7. K. Kouba and J. Vlachopoulos, "Finite Element Simulation of Fuel Tank Blow Molding by T-FORMCAD", 80 pages, Prepared for Ford Motor Company, Dearborn, Mich. (1993).
6. K. Kouba and J. Vlachopoulos, "Finite Element Simulation of Pressure Forming", 140 pages, Prepared for Eastman Kodak, Rochester, N.Y. (1992).
5. J. Vlachopoulos and J. Vlcek, "Design of a Low Extensional Rate Die", Prepared for Samuel Strapping Systems, Toronto (1991).
4. J. Vlachopoulos and J. Vlcek, "Deckled Die Coextrusion of LDPE and SURLYN", 60 pages, prepared for Extrusion Dies, Inc., Chippewa Falls, USA (1991).
3. J. Vlachopoulos, H. Mavridis and C. Tzoganakis, "Analysis of Polymer Melt Flowm Through a Tube with Solidification" 75 pages, Prepared for Alcan International Ltd., Kingston, Ontario (1988).
2. J. Vlachopoulos and E. Mitsoulis, "Simulation of Plexiglas V(045) Calendering", 44 pages, Prepared for Rohm and Haas Company, Bristol, PA (1983).
1. J. Vlachopoulos, "Burner Tube Design Evaluation", 40 pages, Prepared for Falconbridge Nickel Mines Ltd., Toronto (1971).

COMMERCIALY AVAILABLE SOFTWARE PACKAGES

(developed by J. Vlachopoulos and co-workers and licensed to about 500 corporations in 30 countries)

1. POLYCAD 2-D: A General Purpose Finite Element Package for Polymer Process Analysis and Design.
2. SPIRALCAD: A Flow Simulation Package for Design of Spiral Mandrel Dies.
3. FLATCAD: A Flow Simulation Package for Flat Film and Sheet Die Design.
4. EXTRUCAD: A Simulation Package for Single Screw Extrusion. Fully reworked and renamed NEXTRUCAD (2004).
5. COEXCAD: A Flow Simulation Package for Feedblock Coextrusion.
6. CALENDERCAD: A Simulation Package for Calendering.
7. T-FORMCAD: A Finite Element Package for Simulation of Thermoforming and Blow Molding.
8. LAYERCAD: A Simulation Package for Multilayer Flows.
9. B-FILMCAD: A Simulation Package for Bubble Formation in Film Blowing.

10. VISCOFIT and POLYBANK: These are companion software packages for fitting, storage and retrieval of material data.
11. RHEOMWD: Determination of polydispersity of polymers from rheological data.
12. XTRU-XPRT - An expert system for plastics extrusion.

These packages were originally licensed through McMaster University. In 1994, a spin-off company, POLYDYNAMICS, INC. was founded by J. Vlachopoulos (www.polydynamics.com). Licensees of the software include corporations (several Fortune 500), universities and research institutes in more than 500 industrial sites and research centres in 30 countries around the world.

SEMINARS AND LECTURES

Pol. Proc. Soc. (PPS2015, Europe-Africa) Conference, Graz, Austria
September 2015 “The Role of Additives and Calcium Carbonate Filler in Rigid PVC Pipe Extrusion”

Special Rheology Symposium in Honor of Prof. R.I. Tanner, Samos, Greece
June 2015 “A Critical Review of Mathematical Modeling and Technological Developments in Blown Film Extrusion”

Pol. Proc. Soc. (PPS-31) International Conference, Jeju Island, S.Korea
June 2015 “Extrusion of Double-Walled Corrugated Pipe”

Canadian Society of Rheology (CSR-SCR) Mason Award Symposium, Montreal, Canada
May 2015 “The Role of PVC Rheology in Pipe Extrusion”

73rd Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium
May 2015 2 days of lectures, organized by Polydynamics Inc.

Asian Workshop on Polymer Processing, Kenting, Taiwan
November 2014 Plenary “Challenges and Prospects for Quantitative Predictive Modeling for Cast and Blown Film Extrusion”
Panel “Competing in the Production of Hollow Products: Injection Molding, Rotational Molding, Thermoforming, Blow Molding and Additive Technology”

Polym. Proc. Soc. Europe/Africa Conference, Tel Aviv, Israel
October 2014 “Particle Coalescence (Sintering) in Polymer Processing and Beyond”

7th Hellenic Society of Rheology Conference, Crete, Greece
July 2014 “Rheology: from Homer and Heraclitus through Greek (Liquid) Fire to Problem Solving in the Polymer Processing Industry”

Polymer Processing Society (PPS-30) Conference, Cleveland, OH
June 2014 Lecture 1 “A Critical Review of Technological Developments and Mathematical Modeling in Single Screw Extrusion”

Lecture 2 “Some Issues and Experiences in Recycling of Polyethylene”

SABIC Lectures, University of Akron, Akron, OH

May 2014 Lecture 1 “Progress and Challenges in Predictive Modelling in Cast and Blown Film Extrusion”

Lecture 2 “Rheological Aspects of Highly Filled Natural Composites Extrusion”

72nd Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium

April 2014 2 days of lectures, organized by Polydynamics inc.

SPE Student Chapter, Chem. Eng., McMaster University, Hamilton, ON

February 2014 “What is a patent, what it takes to get one, how to defend yours and how to nullify somebody else’s”

Seminar at Clopay Corporation, Cincinnati, OH

December 2013 “Progress in Rheological Modeling and Prospects for Predictive Modeling in Film Processing”

Soc. of Rheol. (SOR) Meeting, Montreal, QC

October 2013 “On Negative Pressures Reported in Modeling of Rotating Process Machinery”

Pol. Proc. Soc. (PPS-29) Conference, Nuremberg, Germany

July 2013 “De-Agglomeration, Dispersion, and Reactive Mixing in a Pulsating Micro-Reactor”

Ingenia Polymers Conference, Bahrain

April 2013 Lecture 1 “Troubleshooting Extrusion Processes through Rheology and Flow Simulation”

Lecture 2 “Problem Solving through Rheology”

70th Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium

April 2013 2 days of lectures, organized by Polydynamics Inc

71st Intensive Short Course on Polymer Rheology and Extrusion

January 2013 3 days of lectures offered via internet exclusively for employees of INDESCA, Maracaibo, Venezuela

69th International Intensive Short Course, Burlington, ON, Canada

November 2012 2 days of lectures “Polymer Rheology and Extrusion”

68th International Intensive Short Course, University of Duisburg-Essen, Germany

October 2012 2 days of lectures entitled “Rheologie der Kunststoffe und Extrusion” (presented in German)

XIVth Intern. Cong. Rheology, Lisbon, Portugal

August 2012 “The Role of Rheology in Rotational Foam Molding”

Polym. Proc. Soc. (PPS), Americas Meeting, Niagara Falls, Ontario, Canada

May 2012 “Progress in Flat Die Design for Extrusion and Coating”

67th International Intensive Short Course, Brussels, Belgium

- April 2012 2 days of lectures entitled “Polymer Rheology and Extrusion”
- Polym. Proc. Soc. (PPS–27) Annual International Conference, Marrakech, Morocco
May 2011 “Defects in Industrial Extrusion”
- Institute of Engineering of Polymer Materials, Torun, Poland
April 2011 “Extrusion Die Design and Material Considerations”
- University of Technology, Warsaw, Poland
April 2011 “Computer Aided Design of Extrusion Dies”
- 66th International Intensive Short Course, Brussels, Belgium
April 2011 2 days lectures on “Polymer Rheology and Extrusion”
- H.A.S. L. Corporation Seminar Day, Tokyo, Japan
February 2011 “Technological Advances in Polymer Extrusion and the Role of CAE”
- Kanazawa University, Kanazawa, Japan
February 2011 “The Role of Rheology in Polymer Processing”
- K – Show Special Seminar, Düsseldorf, Germany
November 2010 “Rheology and Extrusion Equipment Design”
- Polym. Proc. Soc. (PPS), Regional Meeting, Istanbul, Turkey
October 2010 “Recent Progress and Future Challenges in Extrusion of Wood Polymer Composites”
 “Extrusion: Rheology, Die Design and Troubleshooting”
- Canadian Plastics Industry Association (CPIA) Plastics Forum, Toronto, Canada
October 2010 “Process Optimization through Rheology”
- Polym. Proc. Soc. (PPS–26) Annual International Conference
July 2010 “Romancing the Rheological Design of Extrusion Dies”
- Ecole Polytechnique Montreal, Canada
May 2010 “From Coalescing Powder Particles to Large Rotomolded Hollow Parts”
- 22e Entretiens Jacques Cartier Rhone –Alpes, Lyon ,France.
December 2009 “Extrusion et Rheologie des Composites Bois-Polymers” (in French)
- Polym. Proc. Society (PPS) Regional Meeting, Larnaca, Cyprus
October 2009 “Computer Simulations and Experiments in Single Screw Extrusion”
- 8th World Congress Chem. Eng., Montreal, PQ, Canada
August 2009 “Modeling Advances and Current Challenges in Rotational Molding of Polymers”
- Adv. Pol. Sci. Tech. (APST ONE), sponsored by Borealis, Linz, Austria
July 2009 “Improving Rotational Molding through Understanding of Fundamental

- Mechanisms”
Ecole Polytechnique, Montreal, PQ, Canada
May 2009 “Extrusion et Rheologie des Composites Bois-Polymeres”
- University of Akron, Akron, OH, USA
April 2009 “From Coalescing Powder Particles to Large Rotomolded Parts”
- Polym. Proc. Society Annual International Meeting (PPS-25), Goa, India
March 2009 “Selection and Modification of Resins for Rotational Molding”
- PPS Americas Meeting, Charleston, SC
October 2008 “The Role of Viscosity, Elasticity and Surface Tension on Polymer Particle Coalescence”
- 65th International Intensive Short Course on Polymer Rheology and Extrusion, Milano, Italy
October 2008 2 days of lectures entitled "Seminario Internazionale: Reologia dei Polimeri e Ottimizzazione dell'Estrusione". Organized by Viadelo Srl. (Presented 75% in Italian and 25% in English).
- Borealis, Linz, Austria
October 2008 "Challenges in Computational Analysis of Extrusion Processes"
- NTU, Athens, Greece
September 2008 "Ekselikseis Stin Ekvoli Polymeron: Ylika, Kochlioantlies, Kefales" (in Greek)
- PPS-24, Annual International Meeting, Salerno, Italy
June 2008 "Rethinking the Mathematical Modelling of Film Blowing"
- 62nd International Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium
April 2008 2 days of lectures.
- 64th International Intensive Short Course on Polymer Rheology and Extrusion, Arnhem, Netherlands
April 2008 2 days of lectures held in-house at Colbond Corporation
- 63rd International Intensive Short Course on AIMPLAS, Valencia, Spain
March 2008 2 days of lectures (in Spanish).
- Poliuna, Universidad Nacional, Heredia, San Jose, Costa Rica
January 2008 "Reologia de Polimeros Fundidos" (in Spanish)
- SPE Extrusion Minitex and Conference at K-Show, Duesseldorf, Germany
October 2007 "Challenges in the Extrusion of PLA and Other Biodegradable Polymers"
- PPS Europe Meeting, Goeteborg, Sweden
August 2007 "Characterization of Wood-Filled Polymer Composites with the Help of a Capillary Viscometer"

PPS-23, Salvador, Brazil

- June 2007 "Corrigir os Problemas do Processo Filme Soprado" (in Portuguese)
June 2007 "The Influence of Matrix Molecular Weight, Fiber Size and Coupling Agents on Melt Flow Behavior of Wood Polymer Composites"

RIGAS S.A, Athens, Greece

- May 2007 "Improving the Art of Selection and Modification of Polymers for Rotational Molding" (presented in Greek)

AERC 2007, Napoli, Italy

- April 2007 "Flow Instabilities in Extrusion of Biodegradable Polymers"

61st International Intensive Short Course on Polymer Rheology and Extrusion

- March 2007 2 days of lectures, Miura Peninsula (near Kamakura), Japan

60th International Intensive Short Course on Polymer Rheology and Extrusion

- February 2007 2 days of lectures, Brussels, Belgium

D.B. Robinson Distinguished Speaker Series, University of Alberta, Edmonton, Canada

- January 2007 "Optimization of Polymer Processing Operations Through Mathematical Modelling and Simulation"

PPS Regional Meeting, Roodevallei near Pretoria, South Africa

- October 2006 "Rheology and Extrusion of Wood Polymer Composites"

PLAMEDIA, Tokyo, Japan

- July 2006 "Modelling of the Blown Film Process Including Polymer Flow in an Extruder and the Aerodynamics of Cooling"

22nd Annual International Meeting of PPS, Yamagata, Japan

- July 2006 "Rheology of Some Biodegradable Polymers"

Sumitomo Bakelite, Kobe, Japan

- June 2006 "Problem Solving in Polymer Processing with the Help of Rheology"

Sekisui Chemical, Kyoto, Japan

- June 2006 "Polymer Rheology and Blown Film Extrusion"

59th International Intensive Short Course on Polymer Rheology and Extrusion

- May 2006 2 days of lectures, Niagara Falls, ON.

Annual European Rheology Conference, Hersonisos, Crete, Greece

- April 2006 "Surface Tearing and Wall Slip Phenomena in Extrusion of Natural Fiber Polymer Composites"

10th Anniversary of PPRC, Queen's University, Belfast, North Ireland

- April 2006 "Progress in Wood Plastics Composites Around the World"

58th International Short Course on Polymer Rheology and Extrusion

- February 2006 2 days of lectures, Brussels, Belgium

VIADELO/Milan Plast, Milan, Italy

February 2006 "Recent Developments in Machinery, Materials and Modelling in Blown Film Extrusion"

Future Design, RTR, Fort Lauderdale ,Fl.orida.

January 2006 "The Role of Rheology in Blown Film Extrusion"

57th International Short Course on Polymer Rheology and Extrusion

November 2005 2 days of lectures, Milan, Italy (organized by VIADELO S.R.L.)

PPS Regional Meeting, Quebec, Canada

August 2005 "Rheological Aspects of Wood-Polymer Composites Extrusion"

5th GRACM International Congress on Comp. Mechanics, Limasol, Cyprus

July 2005 "Simulation of Laminar Polymer Melt Flow and Turbulent Air-Jet Cooling in Blown Film Production"

56th International Short Course on Polymer Rheology and Extrusion

June 2005 2 days of lectures, Brussels, Belgium

Panhellenic Plastics Conference, Athens, Greece

March 2005 "Shediasmos Mitron Ekvolis Plastikon Basismenos se Arithmitikes Prosmoiioseis Kai Biomihaniki Peira"

EXTRUMA, Frankfurt, Germany

February 2005 "The Role of Rheology in Polymer Extrusion"

"25 Jahre KTP" Tagung, Paderborn, Germany

February 2005 "Technologische Entwicklungen und Fortschritte der Modellierung bei der Blasfolienextrusion" (in German)

55th Intern. Intense Short Course on Polymer Rheology and Extrusion

February 2005 2 days of Lectures, Brussels, Belgium

PPS Regional Meeting, Florianopolis, Brazil

November 2004 "A função da Reologia para Extrusão" (in Portuguese)
"Recent Progress and Future Challenges in Rotational Molding"

K-show SPE Minitec, Düsseldorf, Germany

October 2004 "The Role of Rheology in Polymer Extrusion"

54th Intern. Intense Short Course on Polym. Rheol. & Extrusion

August 2004 3 days of lectures, Burlington, Ontario

Hellenic Society of Rheology Meeting, Athens, Greece

June 2004 "Modeling Challenges in Plasticating Screw Extrusion"

Future Design, R2R Symposium, Ft. Lauderdale, FL.

January 2004 "Aerodynamic and Heat Transfer Considerations in Blown Film Extrusion"

53rd Intern. Intensive Short Course on Polymer Rheology & Extrusion

February 2004 3 days of lectures, Brussels, Belgium

Queen's University, Belfast, N. Ireland

December 2003 "Extrusion of Heavily Filled Polymers for the Production of Plastic Lumber"

International Conference, New Technologies in Extrusion, Viadelo, s.r.l., Milano, Italy

November 2003 "The Role of Polymer Rheology in Extrusion"

University of Lecce, Italy

November 2003 "The Role of Polymer Rheology in Extrusion"

Polymer Processing Society (PPS) Regional Meeting, Athens, Greece

September 2003 "Some Experiences on Extrusion Die Design"

Polymer Processing Society (PPS) Annual Meeting, Melbourne, Australia

July 2003 "Extrusion of Heavily Filled Polymers for the Production of Plastic Lumber"

51st International Intensive Short Course on Polymer Rheology and Extrusion

July 2003 3 days of lectures, Burlington, ON, Canada

Novacel, Guadalajara, Mexico

June 2003 "Reologia y Extrusion de Polimeros" (in Spanish)
52nd International Intensive Short Course, 3½ days of lectures

European Rheology Forum, Stockholm, Sweden

June 2003 "Technological Developments and Modeling of Blown Film Extrusion"

University of Ljubljana, Slovenia

April 2003 "Technological Developments in Blown Film Extrusion"

University of Thessaloniki, CPERI, Greece

March 2003 "Reologia Polimeron" (in Greek)

Panhellenic Conference on Plastics, Athens, Greece

March 2003 "Technologikes Exelixeis stin diergasis ekvolis me emfisisi gia paragogi fillou" (in Greek)

University of Athens, Greece, Industrial Chemistry

March 2003 "Reologia Polimeron" (in Greek)

ISTIL – University of Lyon, Villeurbanne, France

March 2003 "Developpements technologique et modelisation de soufflage de gaine" (in French)

50th International Intensive Short Course on Polymer Rheology and Extrusion

February 2003 3 days of lectures, Brussels, Belgium

PPS Regional Meeting, Taipei, Taiwan

November 2002 “Improving the Art of Selection and Modification of Polymers for Rotational Molding”

European Conference on Rheology, Erlangen, Germany

September 2002 “Rheological Aspects of Plastic Wood Extrusion”

SPE Thermoforming Meeting, Nashville, TN

September 2002 “The Rheology of the Sheet: How the Sheet Behaves”

49th Intern. Intensive Short Course on Polymer Rheology and Extrusion

August 2002 3 days of Lectures, Burlington, Ontario, Canada

Future Design Inc. – Workshop, Toronto Ontario

June 2002 “The Aerodynamics of Air Rings”

PPS Meeting, Guimaraes, Portugal

June 2002 “Blown Film Extrusion: Technological Developments and Computer Simulations”

48th Intern. Short Course on Polymer Rheology and Extrusion

June 2002 3 days of Lectures, Milan, Italy (organized by VIADELO)

University of Akron, Akron, Ohio

April 2002 “The Technology and Computer Simulation of the Film Blowing Process”

47th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium

February 2002 3 days of Lectures

46th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

July 2001 3 days of Lectures

3rd Pacific Rim Conference on Rheology

July 2001, “Extrudate Surface Tearing and other Problems in Extrusion of Heating Filled Polymers”

Hellenic Society of Rheology Meeting, Patras, Greece

June 2001 “Particle Sintering and Melt Densification in Rotational Molding”

SPE ANTEC, Dallas, Texas

May 2001 “Resolved and unresolved problems in Coextrusion”

45th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Brussels, Belgium

March 2001 3 days of Lectures at EXXONMOBIL Europe (Machelen)

44th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Amsterdam, The Netherlands

December 2000 3 days of Lectures

Intern. Rheo. Congress, Cambridge, U.K.

August 2000 "The Role of Aerodynamics of Cooling and Polymer Rheology in the Film Blowing Process"

PPS Annual Meeting, Shanghai, China

June 2000 "Resolved and Unresolved Issues in Extrusion Die Design"

43rd Intern. Intensive Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

June 2000 4 days of lectures

Peter Benham Distinguished Lecture, Queen's University, Belfast, N. Ireland

May 2000 "The Role of Polymer Rheology, Equipment Design and the Aerodynamics of Cooling in Film Blowing"

42nd Intern. Intensive Short Course on Polymer Rheology and Extrusion, Organized by RMIT Melbourne, Australia

April 2000 2 days of lectures

MOLDFLOW Corporation, Kilsyth, Australia

April 2000 "Facts, Fallacies, Approximations and Simulations Involving Polymer Entry Flow"

SPE Extrusion Minitec, Toronto, Ontario

March 2000 "Fundamentals of Polymer Extrusion"

PPS Regional Meeting, Bangkok, Thailand

December 1999 "Recent Technological Developments and the Computer Simulation of the Film Blowing Process"

PLAMEDIA Corporation, Tokyo, Japan

December 1999 "Single Screw Extrusion Modeling"

41st Intern. Intensive Short Course on Polymer Rheology and Processing, Univ. of Athens, Greece

November 1999 3 days of Lectures entitled "Reologia Kai Morfopollsi Polymeron" (in Greek)

MENUSIM (European Commission) Workshop, Paris, France

October 1999 "Rheological Considerations in Modelling"
"Design Considerations for Film Co-extrusion, Profiles and Wire Coating"

SPE Extrusion Minitec, Beaumont, Texas

October 1999 "The Role of Rheology in Extrusion"

40th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

June 1999 4 days of lectures

Annual Polym. Proc. Soc. (PPS) Meeting

June 1999 "Rethinking the Simulation of Film Blowing"

Can. Therm. Anal. Soc. Tech. Meeting, Mississauga, Ontario

May 1999 "The Importance of Rheological Characterization"

Dow Chemical, Technical Advisory Committee, Midland, Michigan

May 1999 Computer Methods for Polymer Processing Analysis and Design

US/Canada Cross-Border Plastics Alliance, Niagara-on-the-Lake

April 1999 Plastics Research and Education in the Great Lakes Region

Gordon Research Conference, Ventura, California

March 1999 "Numerical Simulation of the Film Blowing Process in the Light of the Latest Technological Innovations"

Centre Jacques Cartier, Lyon France

December 1998 "Le Role de la Structure Moléculaire et de la Rhéologie Sur l'Extrusion des Polymères" (in French)

39th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

December 1998 3 days of lectures

38th Intern. Intensive Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

October 1998 4 days of lectures

Soc. Plastics Engineers, SPE, Rochester Section, Rochester, New York

October 1998 "Troubleshooting the Extrusion Process"

5th European Rheology Meeting, Portoroz, Slovenia

September 1998 "Particle Coalescence and Bubble Removal in Rotational Molding"

Hellenic Society of Rheology Meeting, Crete, Greece

September 1998 "Problem Solving Using Rheology and Computer Simulation"

A Short Course on Rheology and Extrusion, Burlington, Ontario

June 1998 4 days of lectures

Polymer Processing Society (PPS) Annual Meeting, Yokohama, Japan

June 1998 "Academic Research and Industrial Applications"

Seminar organized by Ryoka Systems, Tokyo, Japan

June 1998 "Rheology and Polymer Extrusion"

SUMITOMO Chemical, Tokyo, Japan

June 1998 "Rheology and Computer Simulation in Polymer Processing"

SUMITOMO Heavy Industries, Tokyo, Japan

June 1998 "The Role of Rheology in the Simulation of Thermoforming"

TETRAPAK, Lund, Sweden

February 1998 "Troubleshooting the Extrusion Process"

Simulation Seminar, Odensee, Denmark

February 1998 "Recent Progress and Future Challenges in Computer-Aided Polymer Processing Analysis and Design"

MOBIL Plastics Europe, Luxembourg

February 1998 3-day Short Course on Polymer Rheology and Extrusion

Short Course on Polymer Rheology and Extrusion, Brussels, Belgium

December 1997 3 days of lectures

Can. Plast. Ind. Assoc. (CPIA) - Short Course on Troubleshooting

November 1997 1 day lecture

EXXON, Brussels (Machelen), Belgium

October 1997 3-day Short Course on Polymer Rheology and Extrusion

Ind. Res. Dev. Inst. (IRDI), Midland, Ontario

October 1997 "Polymer Properties and the Process of Injection Molding"

Association of Bras. Polym. (ABPOL) Conference, Salvador, Brazil

September 1997 "Computer Methods in Polymer Processing"

PPS European Meeting, Gothenburg, Sweden

August 1997 "A Rotational Approach to Fault Diagnosis and Troubleshooting in Plastics Extrusion"

NATO Advanced Study Institute on Plastics Recycling, Antalya, Turkey

June 1997 "Processing of Recycled Plastics"

Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

June 1997 4 days - Principal Lecturer and Course Director

Brockhouse Institute for Materials Research, McMaster University

April 1997 "Mathematical Modelling in Polymer Processing"

Mobil Chemical, Rochester, N.Y.

April 1997 "Die Design and Simulation for Coextrusion"

22nd Australasian Polymer Symposium, Auckland, New Zealand

February 1997 "Computer Aided Polymer Process Analysis and Design"

Association of Bras. Polym. (ABPOL) Conference, Salvador, Brazil

September 1997 1 day "Polymer Rheology and Processing"

Short Course on Polymer Rheology and Extrusion, Amsterdam, The Netherlands

December 1996 3 days - Principal lecturer and Course Director

Short Course on Polymer Rheology and Extrusion, KTH (Royal Inst. Tech.), Stockholm, Sweden

September 1996 3 days of lectures

PPS-12, Sorrento, Italy

May 1996 "Some New Results in Rotational Molding"

Short Course on Polymer Rheology and Extrusion (3 days), Milano, Italy

March 1996 Principal Lecturer

Seminar on Extrusion Die Design, Toronto, Ontario

April 1996 Principal Lecturer, Organized by CPI (SPI)

Short Course on Polymer Rheology and Extrusion, Burlington, Ontario

September 1996 4 days - Principal lecturer and Course Director

Short Course on Polymer Rheology and Extrusion, Düsseldorf, Germany

December 1995 Principal Lecturer and Course Director

Eastman Kodak, Rochester, NY

September 1995 "Computer Methods for Polymer Process Analysis and Design"

Short Course on Polymer Rheology and Extrusion (4 days), Tokyo, Japan

September 1995 Principal Lecturer

3rd Intern. Congress on Ind. Appl. Math., Hamburg, Germany

July 1995 "Simulation of Blow Molding and Thermoforming"

Short Course on Polymer Rheology and Extrusion (4 days), Burlington, Ontario

July 1995 Several Lectures (Course Director and Principal Lecturer)

Short Course on Polymer Rheology and Processing (4 days), Porto Carras, Greece

June 1995 Several Lectures (Course Director)

OCMR Workshop on Extrusion Die Design (Coorganizer), Toronto, Ontario

June 1995 "The Role of Rheology in Extrusion"

Brasil Plast '95, Sao Paulo, Brazil

May 1995 "Computer Methods in Polymer Processing Analysis and Design"
Short Course on Polymer Rheology and Processing (3 days), Sao Paulo,
Brazil (Principal Lecturer)

Rotomolding Workshop, McMaster University, Hamilton, Ontario

May 1995 Organizer and discussion panelist

Woodfibres and Plastics Conference, Madison, Wisc.

April 1995 "Computer Simulation of Extrusion, Injection Molding and Thermoforming"

HANWHA Group, Daejeon, Korea

March 1995 Two Lectures on Polymer Rheology and Processing

PPS-11, Seoul, Korea

March 1995 "Extrusion Die Design"

General Tire, Akron, Ohio

April 1995 "Extrusion Die Design"

University of Akron, Akron, Ohio (AKRON POLYMER LECTURE)

April 1995 "Computer Methods for Polymer Process Analysis and Design"

Case Western Reserve University, Cleveland, Ohio

March 1995 "Computational Challenges in Extrusion and Injection Molding"

Dow Chemical, Freeport, Texas

November 1995 "Computer Simulation in Polymer Processing"

Short Course on Polymer Rheology and Extrusion (3 days), Brussels, Belgium

December 1994 Several lectures (Course Director)

General Electric, Corporate R and D, Schenectady, NY

November 1994 "Flow Instabilities in Extrusion and Injection Molding"

NATO Advanced Study Institute, Alvor, Portugal

October 1994 Two lectures on: 1) Thermoforming and Blowmolding, 2) Extrusion Die Design

European Rheology Conference, Sevilla, Spain

September 1994 "The Role of Rheology in Thermoforming and Blowmolding"

Eastman Chemical, Kingsport, Tenn (4 days)

June 1994 Short Course on Polymer Rheology and Extrusion (Principal Lecturer)

Plastics-Wood Fibres Conference, Toronto

April 1994 "Computer Modeling in Polymer Processing"

IRDI - Toronto

March 1994 "Computer Modeling in Polymer Processing"

Short Course on Polymer Rheology and Processing (4 days), Burlington, Ontario

May 1994 Several lectures (Course Director)

Short Course - Organized by RMIT, Melbourne, Australia

December 1993 One day of lectures on computer modeling of polymer processing

PPC-3, Gold Coast, Australia

December 1993 "The Role of Molecular Structure in Polymer Processing"

Ryoka Systems, Tokyo, Japan

October 1993 "The CAPPA-D Software Packages"

Short Course on Polymer Processing and Rheology (5 days)- Corfou, Greece

June 1993 Several lectures on Polymer Rheology and Processing (Course Director)

Short Course on Polymer Processing and Rheology (4 days)-Burlington, Ontario

May 1993 Several lectures on Polymer Rheology and Processing (Course Director)

O'Sullivan Corporation, Winchester, VA.

May 1993 "Rheology and Computer Modeling of Thermoforming"

T.T.I. Automotive Trim Seminar

March 1993 "Rheology and Computer Modeling of Thermoforming", Detroit, Michigan.

40th Japan Society of Rheology Meeting, Kobe, Japan

November 1992 "Rheological Challenges in Polymer Process Modelling"

Mitsubishi Petrochemical, Yokaichi, Japan

November 1992 "Computer-Aided Polymer Processing"

Bridgestone Corporation, Tokyo, Japan

November 1992 "Computer-Aided Polymer Processing"

Polymer Processing Society Meeting, Prague, Czechoslovakia

September 1992 "The Effects of Multiple Extrusion on the Reprocessability of HDPE".

NUMIFORM, Sophia Antipolis, France

September 1992 "Some Experiences in Creating and Using Software for Polymer Processing and Design".

International Congress on Rheology, Brussels, Belgium

August 1992 "Modeling of Thermoforming and Blow Molding."

Polymer Processing Society Meeting, New Delhi, India

March 1992 Computer Simulation and Equipment Design for Polymer Processing.

Indesca, Maracaibo, Venezuela

February 1992 "Procesamiento de Polimeros: Fundamentos y Metodos Computacionales",
Twenty-four hours of lectures in Spanish.

Short Course on Polymer Rheology and Processing, Porto Carras, Greece (5 days)

June 1992 Several lectures on Polymer Rheology and Processing (Course Director and principal lecturer).

Short Course on Extrusion, Milwaukee, Wisconsin

September 1991 "Computer Modeling of Polymer Extrusion".

IUPAC - Rheology of Polymer Melts Meeting, Prague, Czechoslovakia

July 1991 "CAD-CAM Methods in Polymer Processing" and Discussion leader on rheological measurements.

Electrolux, Stockholm, Sweden

June 1991 "Rheology and Computer Modeling of Thermoforming"

SPE ANTEC, Atlanta, Ga.

April 1988 POLYCAD: A Finite Element Program for Polymer Flow Analysis Through Extrusion Dies

Intern. Polym. Proc. Group, Berkeley, Ca.

January 1988 "CAD-CAM Methods in Polymer Processing"

AICHE National Meeting, New York, NY

November 1987 "Finite Element Analysis of Non-Isothermal Polymer Melt Flows"

TAPPI Conference, Polym. Lam. Coat., San Francisco, CA

September 1987 "Interface Determination in Multilayer Extrusion"

Cong. Interamer. Ing. Chim., Lima, Peru

June 1987 "El Metodo de los Elementos Finitos por la Simulation de Processos de Flujo de Polimeros" (in Spanish)

Polymer Production and Polymer Processing Short Courses, held at McMaster University and Porto Carras, Greece (two weeks)

June 1987 Several lectures on Polymer Rheology, Processing and CAD-CAM methods.

Canadian Engineering Centennial, Montreal, PQ

May 1987 "Success and Failures of CAD-CAM Methods in Polymer Processing"

Polym. Proc. Soc. Meeting, Stuttgart (Federal Republic of Germany)

April 1987 "Numerical Simulation of Transient Mold Filling"

Soc. Rheol. Meeting, Santa Monica, CA

January 1987 "Some Free Boundary Problems in Polymer Processing"

World Congress, Chemical Engineering, Tokyo (Japan)

September 1986 "Finite Element Simulation of Injection Mold Filling"

Daicel Chemical Co., Himeji (Japan)

September 1986 "Successes and Failures of CAD-CAM in Polymer Processing"

Intern. Polym. Proc. Group Meeting, Tokyo (Japan)

September 1986 "Numerical Techniques and Problems in Polymer Processing"

Intern. Heat Transf. Conf., San Francisco, CA

August 1986 "Finite Element Simulation of Non-Isothermal Low-Re Flows"

European Rheology Meeting, Prague (Czechoslovakia)

June 1986 "The Fountain Effect in Injection Mold Filling"

McMaster University (Short Course on Polymer Production Technology)

May 1986 "Polymer Rheology" (Repeated at Porto Carras, Greece June 1986)

Baker-Perkins Inc., Saginaw, MI

April 1986 "POLYCAD: A Finite Element Program for Polymer Process Analysis and Design"

State University of New York at Buffalo, NY

October 1985 "CAD-CAM-CAE in Polymer Process Engineering"

CEMEF, École des Mines, Sophia Antipolis (France)

July 1985 "Recherches Sur la Mise en Oeuvre des Polymères"

Inter. Conf. Num. Meth. Lam. Turb Flow, Swansea, U.K.

July 1985 "Numerical Simulation of Reactive Polymer Flows"

PAC CHEM 84, Honolulu, Hawaii

December 1984 "Numerical Simulation of Polymer Flows Through Process Equipment"

Third International Conference on Reactive Polymer Processing, Strasbourg, France

September 1984 "Computer-Aided Modeling of Reactive Polymer Flows"

International Polymer Processing Group Meeting, Strasbourg, France

September 1984 "Polymer Engineering Research at McMaster"

Akron Polymer Conference, Akron, OH

May 1984 "Recent Advances in Computer-Aided Simulation of Polymer Melt Flows".

Kyoto University, Japan

May 1983 "Finite Element and Finite Difference Methods in Polymer Processing".

Stevens Institute of Technology, Hoboken, NJ

November 1983 "Some Experiences in Using Numerical Methods for Polymer Flow Problems".

Intern. Polym. Proc. Group Meeting, Montreal, PQ

November 1983 "General Considerations in Modeling and the Application of Numerical Methods to Polymer Processing".

McMaster University (Short Course on Polymer Production Technology)

May 1983 "Rheology of Polymer Melts"

PACHEC-83, Seoul, Korea

May 1983 "Analysis of Plastics Extrusion and Calendering by Numerical Methods".

Rohm and Hass, Bristol, PA

April 1983 "The Use of Numerical Methods for the Simulation of Polymer Processing Problems".

III Coloquio Nacional de Macromoleculas, U.S.B. Caracas, (Venezuela)

November 1982 "The Use of Numerical Methods for the Simulation of Polymer Processing Problems. Applications to Extrusion and Calendering".

Société de Machines pour la Transformation des Plastiques, Paris (France)

July 1982 "Simulation Numerique du Calandrage et d'Extrusion" (in French)

École d'Application des Hauts Polymères, Université de Strasbourg (France)

July 1982 "Simulation Numerique d'une Extrudeuse Monovis" (in French)

Institut Algerien du Petrole, Boumerdes (Algeria)

June 1982 "Calandrage des Thermoplastes". "Modelisation d'Extrusion" (in French)

Deutsches Kunststoffinstitut, Darmstadt (Federal Republic of Germany)

May 1982 "Numerische Berechnungen und Experimentelle Ergebnisse Beim Kalandrieren und Extrudieren" (in German)

E.S. Physique et Chimie Industrielle, Paris (France)

May 1982. "Le Gonflement et la Rupture de l'Extrudat des Polymères" (in French)

Institut für Kunststofftechnologie, University of Stuttgart (Federal Republic of Germany)

May, 1982 "Numerische Berechnungen und Experimentelle Ergebnisse beim Kalandrieren und Extrudieren".

Centre de Mise en Forme des Materiaux, Sophia Antipolis (France)

April 1982 "Calandrage de Matières Thermoplastiques" (in French)

Conference of European Rheologists, Graz, (Austria)

April 1982 "Numerical Simulation of a Single Screw Plasticating Extruder".

Institut de Mécanique de Grenoble (France)

March 1982 "Gonflement à la Sortie et Rupture d'Extrudat" (in French)

CEMEF, Ecole des Mines, Sophia, Antipolis, France

November 1981 "La Rupture d'Extrudat" (in French)

CEMEF, Ecole des Mines, Sophia, Antipolis, France

October 1981 "Le Gonflement a la Sortie de la Filiere" (in French)

World Congress Chemical Engineering, Montreal, Quebec

October 1981 "Extrudate Swell in Polymer Rheology - A Review"

CEMEF, Ecole des Mines, Sophia Antipolis, France

September 1981 "Recherches sur la Mise en Oeuvre des Polymeres a McMaster"

University of Toronto, Dept. of Chemical Engineering

March 1981 "Numerical Simulation of Calendering"

McGill University, Montreal, Quebec

November 1980 "Calendering of Thermoplastics"

Intern. Rheol. Congress, Naples, Italy

August 1980 "Rheology in Calendering of Thermoplastics"

US and Japan Joint Meeting on Rheology, Kona, Hawaii

April 1979 "Calendering of PVC: Experiments vs. Theory"

Solvay, Bruxelles, Belgium

August 1978 "Calandrage des Thermoplastes" (in French)

IUTAM Symposium, Louvain'La'Neuve, Belgium

August 1978 "Heat Transfer in Polymer Melt Flows"

SPE-ANTEC, Washington, D.C.

May 1978 "Viscous Dissipation in the Calendering of Power-law Fluids"

Dunlop Research, Sheridan Park, Mississauga, Ontario

June 1977 "Numerical Methods in Rheology and Heat Transfer"

Joint C.I.C.-A.C.S. Viscoelasticity Symposium, Montreal

May 1977 "Post-Extrusion Die Swell"

35th Annual Technical Conference, Soc. Plast. Engrs., Montreal

April 1977 "Should You Use Finite Difference or Finite Element Methods for Polymer Flow Problems"

General Tire & Rubber Co., Akron, Ohio

October 1976 "Polymer Rheology-Processing and Numerical Methods", Also, discussion on Extruder Control

University of Alberta, Chem. Engrg. Dept., Edmonton, Alberta

September 1976 "Finite Element and Finite Difference Methods for Non-Newtonian Fluid Flow Problems"

Dunlop AG, Forschungslabor, Frankfurt, W. Germany

September 1976 (i)"Das Kalandrieren Nicht-Newtonscher Fluessigkeiten" (in German)
(ii)"Strangaufweitung und Schmelzbruch im Relation zu Molekularen und Geometrischen Parametern" (in German)

Stevens Institute of Technology, Chem. Engrg. Dept., Hoboken, U.S.A.

February 1976 "Finite Element and Finite Difference Methods for Non-Newtonian Fluid Flow Problems"

26th Can. Chem. Engrg. Conference, Ontario

October 1976 "An Analysis of Thermoplastics Calendering"

VII Intern. Rheol. Congress, Gothenburg, Sweden

August 1976 "A Comparative Study of Melt Fracture in Capillaries and Slits"

Deutsches Kunststoff Institut, Univ. of Darmstadt, Germany

May 1975 "Strangaufweitung and Schmelzbruch im Relation zu Molekularen Parametern" (in German)

I.K.T. Univ. of Stuttgart, Germany

June 1975 "Die Methode der Finiten Elemente für Fließprobleme" (in German)

E.A.H.P., Univ. of Strasbourg, France

May 1975 "Calandrage des Thermoplastes" (in French)

E.A.H.P., Univ. of Strasbourg, France

May 1975 "Gonflement et rupture de fusion lors de l'extrusion des Polymères"

Jahrestagung der Deutschen Rheologen, Berlin

April 1975 "Die Methode der Finiten Elemente, angewandt auf Probleme bei der Kalendarberechnung" (in German)

I.K.T. Univ. of Stuttgart, Germany

January 1975 "Einige Rheologische Untersuchungen" (in German)

Heat Transfer in Plastics Processing, Bradford, U.K.

April 1974 "Numerical Studies of Non-Newtonian Fluid Flow and Heat Transfer"

Society of Rheology Meeting, Montreal, Quebec

October 1973 "Laminar Non-Newtonian Jets"

Intern. Rheol. Congress, Lyon, France

August 1972 "Die Swell and Melt Fracture: Effects of Molecular Weight Distribution"

Soc. Rheology Meeting, Knoxville, Tenn.

October 1971 "Experimental Evaluation of Expressions Predicting Die Swell"

Canadian High Polymer Forum, Waterloo, Ontario

August 1971 "Critical Stress and Recoverable Shear for Polymer Melt Fracture"

CANCAM, Calgary, Alberta

May 1971 "Some New Results on Compressible Turbulent Impinging Jets of Hot Air"

AIChE Annual Meeting, Chicago, Ill.

November 1970 "Some New Results on Polymer Melt Fracture"

AIChE National Meeting, Atlanta, Georgia

February 1970 "A Finite Difference Solution of the Boundary Layer Equations"

Meeting of Engineering Science in Biomedicine, St. Louis, Mo.

November 1969 "A New Viscosity Model for Blood"