

CURRICULUM VITAE
Nickolas D. Polychronopoulos

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University Education

- PhD (2016) in Mechanical Engineering, University of Thessaly, Volos, Greece
Thesis title: “*Variable Cross-Section Flows in Polymer and Composites Processing*”
159 manuscript pages written in English
- Postgraduate Specialization Diploma (2012) in Mechanical Engineering, University of Thessaly, Volos, Greece
6 advanced courses taken and a thesis
- B.S. (2007) in Materials Science, University of Patras, Patras, Greece

Papers in Peer-Reviewed Journals

- **Polychronopoulos N.D.**, Papathanasiou T.D., *Fluid Penetration in a Deformable Permeable Web Moving Past a Stationary Rigid Solid Cylinder*, Transport in Porous Media (Impact Factor 1.6), **116**, 1, 393-411 (2017)
- **Polychronopoulos N.D.**, Charlton Z., Suwanda D., Vlachopoulos J., *Measurements and Comparison to Predictions of Viscosity of Heavily Filled HDPE with Natural Fibers*, (published online in Advances in Polymer Technology on 21 Sept. 2016, DOI: 10.1002/adv.21775, 7 pages) (Impact Factor 1.1)
- **Polychronopoulos N.D.**, Papathanasiou T.D., *A Novel Model for Resin Infiltration in Pin-Assisted Pultrusion* (published online in Polymer Composites on 19 Nov. 2015, DOI: 10.1002/pc.23860, 10 pages) (Impact Factor 2)
- **Polychronopoulos N.D.**, Papathanasiou T.D., *A Study on the Effect of Drawing on Extrudate Swell in Film Casting*, Applied Rheology (Impact Factor 1.6), **25** (4), 42425 (2015)
- **Polychronopoulos N.D.**, Papathanasiou T.D., *Pin-Assisted Resin Infiltration of Porous Substrates*, Composites Part A: Applied Science & Manufacturing (Impact Factor 3.7), **71**, 126-135 (2015)
- **Polychronopoulos N.D.**, Sarris I.E., Papathanasiou T.D., *3D Features in the Calendering of Thermoplastics: A Computational Investigation*, Polymer Engineering and Science (Impact Factor 1.7), **54** (7), 1712-1722 (2014)

Book Chapters

- **Polychronopoulos N.D.**, Vlachopoulos J., “An Overview of Rheology and Processing of Thermoplastics”, 65 manuscript pages, Lecture Notes, 76th International Intensive Short Course on Polymer Rheology and Extrusion presented at Athena Automation, Vaughan, Ontario, Canada, www.polydynamics.com (May 2017)
- Vlachopoulos J., **Polychronopoulos N.D.**, Tanifuji S., Peter Müller J., “Chapter 4: Flat Film and Sheet Dies”, in *Design of Extrusion Forming Tools*, pages 113-140, Carneiro O.S. and Nobrega M. (Editors), Smithers, RAPRA, London, UK (2012)
- Vlachopoulos J., Castillo R., **Polychronopoulos N.D.**, Tanifuji S., “Chapter 5: Blown Film Dies”, in *Design of Extrusion Forming Tools*, pages 141-168, Carneiro O.S. and Nobrega M. (Editors), Smithers, RAPRA, London, UK (2012)

- Vlachopoulos J., **Polychronopoulos N.D.**, “Chapter 1: Basic Concepts in Polymer Melt Rheology and Their Importance in Processing”, in *Applied Polymer Rheology: Polymeric Fluids with Industrial Applications*, M. Kontopoulou (Editor), pages 1-27, John Wiley & Sons (2011)

Presentations in Conferences (*presenter)

- ***Polychronopoulos N.D.**, Papathanasiou T.D., *Some New Results in Optimal Fluid Infiltration in a Flexible Permeable Substrate Moving Past a Rigid Cylinder*, presented at the 32nd International Conference of the Polymer Processing Society (PPS-32), July 2016, Lyon, France
- **Polychronopoulos N.D.**, *Understanding the Production of Plastic Films, Sheets and Tapes through Mathematical Modeling*, 2016, University of Groningen, The Netherlands
- ***Polychronopoulos N.D.**, Papathanasiou T.D., *Fluid Infiltration of a Permeable Substrate Moving Past a Solid Cylinder*, presented at the Polymer Processing Society Conference 2015 (PPS2015), September 2015, Graz, Austria
- ***Polychronopoulos N.D.**, Papathanasiou T.D., *A Modeling Study for the Pin-Assisted Pultrusion of Porous Substrates*, 8th GRACM International Congress on Computational Mechanics, July 2015, Volos, Greece
- ***Polychronopoulos N.D.**, Papathanasiou T.D., *A Modeling Study of the Pin-Assisted Resin Infiltration of Porous Substrates*, 10th Panhellenic Congress in Chemical Engineering, June 2015, Patras, Greece
- **Polychronopoulos N.D.**, *Papathanasiou T.D., *Flow Induced Resin Infiltration of Porous Substrates*, 30th International Conference of the Polymer Processing Society (PPS-30), June 2014, Cleveland, Ohio, USA
- ***Polychronopoulos N.D.**, Papathanasiou T.D., *Spreading and Pressure Development in Calendering: A Three-Dimensional Approach*, 29th International Conference of the Polymer Processing Society (PPS-29), July 2013, Nuremberg, Germany
- ***Polychronopoulos N.D.**, Papathanasiou T.D., *Spreading and Pressure Development in 3D Calendering of Thermoplastics*, FLOW 2012 – 8th Panhellenic Conference in Fluid Mechanics, November 2012, Volos, Greece
- **Polychronopoulos N.D.**, *Some Experiences in Using the OpenFOAM Software for Polymer Processing Analysis*, invited in MontanUniversität Leoben, August 2012, Leoben, Austria
- Vlachopoulos J., ***Polychronopoulos N.D.**, Tanifuji S., *Computational analysis and design of single screw extruders having screws of complex geometry with mixing elements*, SPE EUROTEC, November 2011, Barcelona, Spain
- Vlachopoulos J., ***Polychronopoulos N.D.**, Nakamura T., *Challenges in computer – aided polymer extrusion die design*, 6th GRACM International Congress on Computational Mechanics, June 2008, Thessaloniki, Greece

Professional Experience

April 15, 2008 – present R&D Engineer (part time, full time effective March 10, 2016) with
Polydynamics Inc, Dundas, Ontario, Canada
(www.polydynamics.com)

Partial list of projects carried out for Polydynamics clients:

- Turbulent flow in sewer and storm water large diameter corrugated plastic pipe with internal roughness for Corma Inc, Toronto, Ontario, Canada (in progress)
- Turbulent water flow simulation near the fitting of two pipes for Corma Inc, Toronto, Ontario, Canada (2016)

- Three-dimensional flow simulation of a rotating extrusion die with complex channels for the production of sausage casings, Nitta Casings, New Jersey, USA (2013 and 2014)
- Simulations and polymer flow analysis of flat dies and rheological assistance for Extrusion Die Systems (EDS) (company President: J. Peter Müller), Kirchdorf an der Krems, Austria, (2010 – 2012)
- Three-dimensional flow simulations and polymer flow analysis for nanocomposites, Institute of Mechanics of Materials and Geostrutures (IMMG, Dr. P. Michelis, President), Penteli, Athens, Greece, (2010 – 2012)
- Simulations and polymer flow analysis of flat and spiral dies, Plamedia Corporation, Tokyo, Japan (2008 – 2010)
- Simulations and polymer flow analysis of extruded plastic pipes, Mikrosan, Turkey, (2008 – 2011)
- Simulations of single-screw extruder and polymer flow analysis of feedblock die, Plastika Kritis S.A., Iraklio, Crete, Greece, (2008 – 2012)
- Simulations and polymer flow analysis, Leptidis Packaging and Printing Company S.A., N. Iraklio, Athens, Greece, (2008 – 2009)
- Simulations and polymer flow analysis for the production of plastic mooring ropes, Katradis Marine Ropes Inc. S.A., Piraeus, Athens, Greece, (2010)
- Three dimensional turbulent air flow simulation in a complex cylindrical geometry for Corma Inc, Concord, Ontario, Canada (2010 – 2012)
- Development and distribution of new software called CALCUTRUDE LITE. The software was distributed to the participants of the 66th to 76th International Intensive Short Course on Polymer Rheology and Extrusion on 2011 – 2017, Brussels, Belgium. The software package enables quick calculations of important polymer flow quantities, such as pressures, shear rates and shear stresses in simple flow geometries
- Full CALCUTRUDE version (in progress)
- Assistance for software installation, operation and interpretation of results to many customers of Polydynamics including:
 - Malvern Instruments Ltd (UK)
 - Tesa SE (Germany)
 - CEAST-ITW Test & Measurement's Group Instron Division (Italy)
 - Viadelo Italy Srl (Italy)
 - Graham Engineering (USA)
 - Ingenia Polymers Corp. (Canada, USA)
 - Barr Inc (USA)
 - Teknor Apex (USA)
 - B&P Process Equipment (USA)
 - University of Campinas (UNICAMP) (Brazil)
 - Resiplastic Ind. & Com LDTA (Brazil)
 - Ain Shams University (Egypt)
 - DKSH (Taiwan)

Memberships in Professional Societies

- Society of Plastics Engineers (SPE) - USA
- Polymer Processing Society (PPS) - International