

**CURRICULUM VITAE****ALEXANDER YARIN**

## Address:

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Mechanical and Industrial Engineering, University of Illinois at Chicago,  
Chicago IL 60607-7022, USA  
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**Academic Degrees:**

February 8, 1977 M.Sc. in Mechanical Engineering  
(with honors), Polytechnic Institute of Leningrad (Leningradskii  
Polytechnicheski Institut imeni M.I. Kalinina), USSR

June 17, 1980 Candidate of Physico-Mathematical Sciences (Ph.D.) Institute for Problems  
in Mechanics, USSR Acad. Sci., Moscow, USSR  
(Institut Problem Mekhaniki Akademii Nauk SSSR)

October 6, 1989 Doctor of Physico-Mathematical Sciences (habilitation), Institute for  
Problems in Mechanics, USSR Acad. Sci., Moscow, USSR  
(Institut Problem Mekhaniki Akademii Nauk SSSR)

**Previous Academic Positions:**

Apr. 1977 - Apr. 1980 Post graduate student, Institute for Problems in Mechanics USSR Acad.  
Sci., Moscow, USSR

May 1980 - Feb. 1986 Junior Research Associate, Institute for Problems in Mechanics,  
USSR Acad. Sci., Moscow, USSR

Feb. 1986 - March 1990 Research Associate, Institute for Problems in Mechanics, USSR Acad.  
Sci., Moscow, USSR

March 1990 - June 1990 Senior Research Associate, Institute for Problems in Mechanics, USSR  
Acad. Sci., Moscow, USSR

October 1990 - June 1997 Associate Professor, Faculty of Mechanical Engineering, Technion,  
Haifa, Israel

June 1997 - Dec. 2005 Professor, Faculty of Mechanical Engineering, Technion, Haifa, Israel

May 1999 - Dec. 2005 Eduard Pestel Chair in Mechanical Engineering, Technion, Haifa, Israel

January 2006 - June 2014 Professor, Mechanical and Industrial Engineering Department,  
University of Illinois at Chicago, USA

June 2014 - Distinguished Professor, Mechanical and Industrial Engineering Department,  
University of Illinois at Chicago, USA

**concurrent:**

1985 - 1989	Lecturer, Faculty of Molecular and Chemical Physics, Moscow Physico-Technical Institute, Moscow, USSR.
1988 - 1990	Professor, Moscow Aviation Technology Institute, Moscow, USSR.
2008-2012	Fellow at the Center of Smart Interfaces, Technical University of Darmstadt, Germany
2012-present	Professor of the Department of Electrical and Computer Engineering at the University of Illinois at Chicago (joint appointment)
2012-2015	Visiting Professor, College of Engineering, Korea University (Seoul, S. Korea)

**Current Research Interests:**

- Hydrodynamics and stability of free liquid jets and films
- Rheology and hydrodynamics of viscoelastic polymeric liquids
- Multiphase flows
- Aerodynamics of gas jets and torches
- Physics and mechanics of advanced technologies in optoelectronics (Optical fibers)
- Numerical investigation of flows with free surfaces by means of the boundary element method
- Combustion theory
- Theory of plasticity
- High-speed penetration
- Drop splashing
- Acoustic levitation
- Evaporation in acoustic field
- Shear friction of polymeric liquids
- Draw resonance in fiber spinning
- Fluid mechanics of sprays
- Spray cooling in microelectronics
- Biofuels
- Nanotechnology: electrospinning of nanofibers, nanoparticle-based ink-jet printing in micro- and optoelectronics, nanofluidics inside carbon nanotubes, continuous deposition of nanocoating on micron- and nano-sized particles in plasma reactors

**Research Experience:**

- |             |  |
|-------------|--|
| 1977 - 1980 | <u>Research work at the Institute for Problems in Mechanics, USSR Acad. Sci.</u> , during the study towards the degree of Candidate of Physico-Mathematical Sciences on "The dynamics and break-up of free liquid jets" (with Dr. V.B. Librovich and Dr. V.M. Entov ). |
|-------------|--|
- - aerodynamics of non-self-similar gas jets
  - - numerical simulation of combustion and aerodynamics of gas torches

- 1980 - 1989 Research work at the Institute for Problems in Mechanics, USSR Acad. Sci.
- - rheology and hydrodynamics of polymeric liquids subjected to strong flows
  - - liquid disintegration during explosions
  - - combustion of liquid and solid propellants
  - - stability and sensibility of fiber spinning and film blowing processes
  - - modelling of pipeline shapes and stability under the action of external flows and waves, and internal fluid flow (in relation to off-shore oil recovery)
  - - modelling of two-phase flows in three-dimensional jets (in relation to sprinklers and fire fighting jets)
- 1989 - 1990 Research work at the Institute for Problems in Mechanics, USSR Acad. Sci.
- creeping flows occurring during formation of preforms for optical fibers by polishing in optoelectronics
  - thermophoretic deposition of particles in the process of preforms formation
  - spin coating of rough wafers
- 1996-1997 Research work at the University of Wisconsin-Madison, Madison, USA
- shear friction of polymeric liquids
  - evaporation of acoustically levitated droplets
  - numerical simulation of drop splashing
  - turbulent drag reduction by polymer additives
  - draw resonance in fiber spinning
- 1990 - 2005 Research work at the Technion, Haifa, Israel
- combustion of fuels with methanol admixture in internal combustion engines; knocking phenomenon
  - growth of coating on turbine blades in dusty flows
  - capillary breakup of thin liquid layer on wires
  - plasticity theory
  - high-speed penetration
  - shaped - charge jets
  - buckling jets
  - stability of rapidly evaporating jets
  - hydrodynamics of optical fibres forming
  - flow-induced on-line crystallization of polymers
  - drop splashing
  - free surface problems
  - acoustic levitation
  - two-phase flows
  - hydrodynamics of spray formation
  - biotechnological devices
  - micromechanics
  - nanotechnology

- manufacturing of nanofibers
- alignment of nanoparticles

2003-2004, 2006- Research work at the University of Illinois at Chicago, Chicago, USA

- nanoparticle-based ink-jet printing in micro- and optoelectronics
- nanofluidics inside carbon nanotubes
- continuous deposition of nano-coating on micron- and nano-sized particles in plasma reactors
  - electrospinning of polymer nanofibers for biomedical applications
  - intercalation of carbon nanotubes
  - controlled drug release
  - micro- and nanofluidics
  - elongational rheometry
  - nano-sensorics
  - smoothing of nanochannels
  - spray cooling in microelectronics
  - biofuels
  - meltblowing of micro- and nanofibers
  - solution blowing of nanofibers
  - cooling of microelectronics
  - biopolymer processing as nanofibers
  - phase change materials
  - mechanics and rheology of construction materials
  - mechanics and stability of foams
  - surfactants and plasticisers
  - filtration through nano-textured filters and membranes.

### Short Appointments:

May - June 1990	Visitor, Institute of Physics, Slovak Academy of Sciences, Bratislava, Czechoslovakia
September - October 1992	Visitor, Max-Planck-Institute für Strömungsforschung, Göttingen, Germany
July - October 1993	Visitor, Max-Planck-Institute für Strömungsforschung, Göttingen, Germany
August - September 1994	Visitor, Max-Planck-Institute für Strömungsforschung, Göttingen, Germany
July - August 1995	Visitor, University of Erlangen - Nurnberg, Germany
April 1996	Visiting Professor at the Isaac Newton Institute for Mathematical Sciences, University of Cambridge, U.K.
July - August 1996	Visiting Position, University of Erlangen - Nurnberg, Germany
August 1996 - September 1997	Visiting Professor, University of Wisconsin - Madison, U.S.A. (on sabbatical).

July - August 1998	Visitor at the Technical University of Darmstadt and the University of Erlangen - Nurnberg, Germany
March 1999	Visiting Professor at the University of Akron, U.S.A.
July - August 1999	Visitor at the Technical University of Darmstadt and the University of Erlangen - Nurnberg, Germany
February 2000	Visitor at the University of Akron, U.S.A.
July - August 2000	Visitor at the University of Wisconsin - Madison, U.S.A.
October 2000	Visitor at the University of Erlangen - Nurnberg, Germany.
May – June 2001	Visitor at the University of Akron, U.S.A.
March - April 2002	Visitor at the University of Akron, U.S.A.
August, November – December 2002	Visitor at the National University of Singapore
September 2002	Visiting Professor at the Centre of Excellence for Advanced Materials and Structures, Polish Acad. Sci., Warsaw.
February 2003	Visitor at the University of Akron, USA.
August 2003- August 2004	Distinguished Professor at the University of Illinois at Chicago, USA (on sabbatical).
2012-2015	Visiting Professor at Korea University, Seoul (S. Korea)

### Teaching Experience

1985 - 1989	Faculty of Molecular and Chemical Physics, Moscow Physico-Technical Institute Moscow, USSR. <i>Rheology and hydrodynamics of polymeric liquids</i> (undergrad. course)
1988 - 1990	Moscow Aviation Technology Institute, Moscow, USSR. <u>General physics</u> (undergrad. course) Prepared undergraduate course of lectures " <i>Technological Hydrodynamics</i> "
1990 -	Technion, Haifa, Israel Hydrodynamics (undergraduate course) Heat transfer (undergraduate course) Introductory combustion (undergraduate and graduate course) Convective heat transfer (graduate course) Advanced topics in fluid dynamics and rheology (graduate course)
1996-1997	Chemical Engineering Department, University of Wisconsin-Madison, USA. <i>Momentum and heat transfer operations</i> - CHE 326 (undergrad. course)

- 1999 Technical University of Darmstadt, Department of Mechanical Engineering, Darmstadt, Germany.  
*Advanced topics in fluid dynamics and rheology* (graduate course).
- 2000 University of Erlangen - Nurnberg, Germany.  
*Advanced topics in fluid mechanics, heat transfer and rheology* (graduate course).
- 2002 Centre of Excellence for Advanced Materials and Structures, Polish Acad. Sci.  
*Electrospinning of nanofibers from polymer solutions and melts.*
- 2006- University of Illinois at Chicago, USA  
*Transport phenomena in micro- and nanotechnology (ME494)*  
*Fluid Mechanics I (ME211)*  
*Fluid Mechanics Lab.*  
*Intermediate Thermodynamics (ME325)*  
*Fundamentals of Turbulence (ME518)*  
*Introduction to Thermodynamics (ME205)*  
*Probability and Statistics for Engineers (IE342)*  
*Heat Conduction (ME521)*  
*Mathematical Methods for Engineers I (ME494)*  
*Mathematical Methods for Engineers II (ME594)*  
*Viscous Flows (ME514)*
- 2009, 2011 Center for Smart Interfaces, TU Darmstadt, Germany  
*Microfluidics*
- 2017 *Atomization and Sprays*
- 2012 -2013 Korea University (Seoul, S. Korea)  
*Transport phenomena in micro- and nanotechnology (ME515)*  
*Heat Conduction (ME521)*
- 2014-2017,2022-2023 Korea University (Seoul, S. Korea)  
*Advanced Applied Mathematics: Complex Analysis with Applications to Hydro- and Aerodynamics, Heat and Mass Transfer, Electricity, Control Theory and the Theory of Elasticity (extended ME494), Partial Differential Equations*
- 2017 Technical University Darmstadt, Germany: One of the lecturers of the short course *Atomization and Sprays*
- 2018 National Nanotechnology Laboratory for Agrobusiness (Embrapa). Sao Carlos, Brazil, August 13-18, 2018. A week-long course 'Electrospinning and solution blow spinning. Fundamentals and recent advances'.
- 2019 Technical University Darmstadt, Germany: One of the lecturers of the short course *Atomization and Sprays*
- 2020 Technical University Darmstadt, Germany: One of the lecturers of the short course *Atomization and Sprays*
- 2021 Technical University Darmstadt, Germany: One of the lecturers of the short course *Atomization and Sprays*
- 2021-2022 Sungkyunkwan University | SKKU · SKKU Advanced Institute of Nanotechnology (SAINT)], S. Korea  
*Transport phenomena in micro- and nanotechnology (ME515)*
- 2022 Technical University Darmstadt, Germany: One of the lecturers of the short course *Atomization and Sprays*

**Administrative Posts**

1992	Member of the Local Organizing Committee of XVIII International Congress of Theoretical and Applied Mechanics in Haifa, Israel.
1992 - present	Member of the Technion Committee for evaluation of new immigrants beginning studies for M.Sc. and D.Sc. degrees.
1993-1995	Member of the interfaculty committee for graduate studies for M.E. degree in Polymer Engineering.
1994/5	Coordinator of the Department seminar.
1995/6	Chairman of the paper review committee of the 26th Israel conference on Mechanical Engineering.
1997/8	Chairman of the 27th Israel Conference on Mechanical Engineering.
2004	Co-Chair for the Pre-nominated Session on the topic "Complex and smart fluids". The 21 <sup>st</sup> International Congress of Theoretical and Applied Mechanics (ICTAM) in Warsaw, Poland from 15-21 August 2004.
2008	Co-Chair for the Pre-nominated Session on the topic "Complex and smart fluids". The 22 <sup>st</sup> International Congress of Theoretical and Applied Mechanics (ICTAM) in Adelaide, Australia, August 2008.
2017	Co-Chair of the Focus Session on "The Physics of Electrospray and Electrospinning" at the 70 <sup>th</sup> Annual Meeting of the Division of Fluid Dynamics of the American Physical Society at Denver, November 19-21 <sup>s</sup> 2017.
2017	Member of the International Advisory Committee of the 5 <sup>th</sup> International Conference Electrospin2018, Stellenbosch, South Africa.
2020	Session organizer and Chairperson at Filtration International Conference & Exposition, Feb. 25-27, 2020, Chicago, USA.
2022	International Centre of Mechanical Studies, Udine, Italy, July 18-22. Course "Materials and Electromechanical and Biomedical Devices Based on Nanofibers" (organizer of the Workshop).

**Reviewing and Refereeing**

AIP Advances  
 ACSNano  
 ACS Applied Materials & Interfaces  
 ACS Industrial&Engineering Chemistry Research  
 ACS Applied Polymer Materials  
 ACS Biomaterials Science&Engineering  
 Acta Biomaterialia

Fluid Dynamics  
 Journal of the Royal Society Interfaces  
 Journal of Engineering Physics  
 Mechanics  
 J. of Tribology, Trans. ASME  
 Int. J. Multiphase Flow  
 J. Rheology  
 J. Aerosol Science  
 Physics of Fluids  
 J. Fluid Mechanics  
 ZAMP  
 Experiments in Fluids  
 Chemical Society Reviews  
 J. Appl. Phys.  
 Appl. Phys. Letters  
 Europhysics Letters  
 Nano Letters  
 Nanoscale  
 Computers & Fluids  
 Fluid Dynamics Research  
 Lab on a Chip  
 Int. J. of Solids and Structures  
 Macromolecular Chemistry&Physics  
 Macromolecular Materials&Engineering  
 Mathematical Models & Methods in Applied Sciences : M3AS  
 Advances in Colloid and Interface Science  
 Polymer  
 J. Aerosol Science  
 Macromolecules  
 Macromolecular Rapid Communications  
 Journal of Polymer Science, Part B  
 Advanced Materials  
 Advanced Functional Materials  
 Langmuir  
 Chemical Engineering Science  
 Biomacromolecules  
 J. Phys. Chem.  
 AIChE Journal  
 Biotechnology Journal  
 Synthetic Metals  
 Physica A  
 e-Polymer  
 Journal of Electrostatics  
 The ASME Journal of Heat Transfer  
 European Journal of Applied Mathematics  
 The European Physical Journal E  
 Journal of the American Chemical Society  
 Journal of Chemical Physics  
 Journal of the American Ceramic Society  
 Computational Fluid Dynamics  
 International Journal of Turbo & Jet Engines  
 Atomization and Sprays  
 J. Sound and Vibration  
 ASME Journal of Vibration and Acoustics.  
 Wave Motion



International Journal of Impact Engineering  
 International Journal of Thermal Sciences  
 International Journal of Heat and Mass Transfer  
 International Journal of Heat and Fluid Flow  
 J. of the Electrochemical Society  
 J. of Theoretical Biology  
 J. of Biomedical Materials Research: Part A  
 Macromolecular Bioscience  
 Chemistry of Materials  
 Journal of Non-Newtonian Fluid Mechanics  
 Journal of Applied Polymer Science  
 Polymer Engineering & Science  
 Journal of Thermophysics  
 Journal of Engineering Mathematics  
 AIChE Journal  
 Physical Review Letters  
 Physical Review Letters A  
 Physical Review Letters E  
 Physical Review Fluids  
 European Polymer Journal  
 Proceedings of the Royal Society of London A  
 Materials Chemistry and Physics  
 Journal of Materials Science  
 Soft Matter  
 Materials Science and Engineering B  
 Archives of Mechanics  
 IEEE IAS Transactions  
 IEEE-TDEI (Transactions on Dielectrics and Electrical Insulation)  
 Acta Mechanica  
 New Journal of Physics  
 Journal of Materials Research  
 Process Biochemistry  
 Chemical Communications  
 Composite Science and Technology  
 Experimental Thermal and Fluid Science  
 Engineering Analysis with Boundary Elements  
 Journal of Mathematics in Industry  
 Bulletin of the Polish Academy of Sciences  
 Separation and Purification Technology  
 Composites B  
     International Symposium on Two-Phase Flow  
         Modelling and Experimentation, October 9-11, 1995,  
         Roma, Italy.  
     The Israel Science Foundation administered by the Israel  
         Academy of Sciences and Humanities.  
     The German-Israeli Foundation for Scientific Research and  
         Development.  
     The 11th International Heat Transfer Conference, Kyongju,  
         Korea, 1998.  
     Ministry of Science, Culture and Sport, Israel  
     2nd International Symposium on Two-Phase Flow Modelling  
         & Experimentation, Pisa, Italy, 1999  
     Israeli Ministry of Science  
     Swiss National Science Foundation  
     United States - Israel Binational Science Foundation

The National Science Foundation, USA  
 DTRA, USA  
 National Science Center, Poland

Member of the Editorial Advisory Board of "Experiments in Fluids" from July 2003.  
 Member of the International Editorial Advisory Board of the Bulletin of the Polish Academy of Sciences from 2004.  
 Member of the International Editorial Advisory Board of Archives of Mechanics from 2014.  
 Member of the Editorial Advisory Board of the journal "Electrospinning", from 2014.  
 Member of the Editorial Advisory Board of 'Physics of Fluids' from 2019.  
 Editor of "Springer Handbook of Experimental Fluid Mechanics"-published in 2008.  
 Associate Editor of "Experiments in Fluids" 2011-present.

### **Awards and Fellowships**

January 1974	University Award for "Outstanding Student Research", Polytechnic Institute of Leningrad
1980 - 1990	Five Awards in the Institute for Problems in Mechanics USSR Acad. Sci. Contests of research works.
1992 - 1995	Rashi Foundation, The Israel Academy of Sciences and Humanities
1996	First Prize Award for an Excellent Poster Presentation at the 26th Israel Conference on Mechanical Engineering
1998	First Prize Award for the best poster presentation at the 11th Intern. Heat Transfer Conf., Kyongju, Korea.
1999	Gutwirth Award, Technion
2003	Prize for Technological Development for Defense against Terror, American Technion Society
2005	Hershel Rich Prize – Technion Innovation Award
2006	3 <sup>rd</sup> Prize of Society of Mechanics, Taiwan
2008-2012	Fellow of the Center of Excellence "Smart Interfaces", Technical University of Darmstadt, Germany
2011	Most Cited Article 2006-2010 [Elsevier: Polymer v. 49, N 10, 2387-2425 (2008)].
2016	Fellow of the American Physical Society.

### **Membership**

American Physical Society  
 Materials Research Society  
 American Society for Gravitational and Space Research

**List of Publications:** Books published– 5; Chapters in books - 12;  
**Papers in professional journals -436; Submitted papers-3; Papers  
 in proceedings of professional conferences – 60, Miscellaneous  
 publications - 7**

#### **Theses:**

1. A.L. Yarin, "Turbulent Boundary Layer with Large Adverse Pressure Gradients", M.Sc. Thesis, Polytechnic Institute of Leningrad, Faculty of Physics and Mechanics, Leningrad, USSR (1977).
2. A.L. Yarin, "Theoretical Study of the Dynamics and Break-up of Free Liquid Jets". Ph.D., Candidate of Sciences (Phys., Math.) Thesis, Institute for Problems in Mechanics Acad. Sci. USSR, Moscow (1980).
3. A.L. Yarin, "Strong Flows of Polymeric Liquids in Jets and Films: Rheology and Hydrodynamics", Doctor of Science (Phys., Math.) Habilitation Thesis, Institute for Problems in Mechanics Acad. Sci. USSR, Moscow (1989).

#### **Books**

1. A.L. Yarin, *Free Liquid Jets and Films: Hydrodynamics and Rheology*. Longman Scientific & Technical and Wiley & Sons, Harlow, New York, 1993, 446 pp.
2. A.L. Yarin, *Electrospinning of Nanofibers from Polymer Solutions and Melts*. Lecture Notes 5. Centre of Excellence for Advanced Materials and Structures, Warsaw, 2003, 110 pp.
3. A.L. Yarin, B. Pourdeyhimi, S. Ramakrishna. *Fundamentals and Applications of Micro- and Nanofibers*. Cambridge University Press, Cambridge, 2014.
4. A.L. Yarin, I.V. Roisman, C. Tropea. *Collision Phenomena in Liquids and Solids*. Cambridge University Press, Cambridge, 2017.
5. A. L. Yarin, M. W. Lee, S. An, and S. S. Yoon, *Self-Healing Nanotextured Vascular Engineering Materials*. Springer Nature, Switzerland AG, Cham, 2019.

#### **Chapters in books**

1. V.M. Entov and A.L. Yarin, "Dynamics of Free Liquid Jets and Films of Viscous and Rheologically Complex Liquids". *Advances in Mechanics, VINITI, Mekhanika Zhidkosti i Gaza (Fluid Dynamics)*, 18, 112-197 (1984) (in Russian).
2. A.L. Yarin, "Self-similarity". *Springer Handbook of Experimental Fluid Mechanics*, pp. 57-82 (2007).
3. A.L. Yarin, "Drop Impact Dynamics: Splashing, Spreading, Receding, Bouncing...". *Annual Review of Fluid Mechanics* v.38, 159-192 (2006).
4. D.H. Reneker, A.L. Yarin, E. Zussman and H. Xu, "Electrospinning of Nanofibers from Polymer Solutions and Melts" *Advances in Applied Mechanics* v. 41, 43-195 (2007).

5. D.H. Reneker, A.L. Yarin, E. Zussman, S. Koombhongse and W. Kataphinan, "Nanofiber Manufacturing: Toward Better Process Control" American Chemical Society Series 918, Chapter 2 (Eds. D.H. Reneker and H. Fong), 7-20, 2006.
- 6.....C.J. Thompson, G.G. Case, A.L. Yarin and D.H. Reneker, "Effects of Parameters on Nanofiber Diameter Determined from Electrospinning Model", *Nanotechnology Research: New Nanostructures*. (Xiaohua Huang, Ed.). Chapter 6, pp. 223-242, Nova Science Publishers Inc., 2007.
7. J.K. Wise, M. Cho, E. Zussman, C.M. Megaridis and A.L. Yarin, "Electrospinning techniques to control deposition and structural alignment of nanofibrous scaffolds for cellular orientation and cytoskeletal reorganization", *Nanotechnology and Tissue Engineering*, pp. 243-260. (Editors: C.T. Laurencin and L.S. Nair) CRC Press, Taylor and Francis (2008).
8. J.K. Wise, E. Zussman, A.L. Yarin, C.M. Megaridis, M. Cho. "Electrospinning techniques to control deposition and structural alignment of nanofibrous scaffolds for cellular orientation and cytoskeletal reorganization", *Nanotechnology and Tissue Engineering*, 2<sup>nd</sup> Edition (Editors: C.T. Laurencin and L.S. Nair), pp. 285- 303, CRC Press, Taylor and Francis (2014).
9. N. Ashgriz, A.L. Yarin. Chapter 1. Capillary instability of free liquid jets. *Springer Handbook of Atomization and Sprays*, pp. 3-53, Springer, Heidelberg (2011).
10. A.L. Yarin. Chapter 2. Bending and buckling instabilities of free liquid jets: experiments and general quasi-one-dimensional model. *Springer Handbook of Atomization and Sprays*, pp. 55-73, Springer, Heidelberg (2011).
11. S. Sinha-Ray, Y. Zhang, A.L. Yarin, S.C. Davis, B. Pourdeyhimi. Solution blowing of soy protein fibers. Chapter 20 in *Biobased Monomers, Polymers, and Materials* (Editors: Smith, P.B., Gross R.A.). pp. 335-348. American Chemical Society Symposium Series 1105, Washington, 2012 (distributed by Oxford University Press).
12. J.K. Wise, M. Cho, E. Zussman, C.M. Megaridis and A.L. Yarin, "Electrospinning techniques to control deposition and structural alignment of nanofibrous scaffolds for cellular orientation and cytoskeletal reorganization", *Nanotechnology and Regenerative Engineering*, pp. 285-303. (Editors: C.T. Laurencin and L.S. Nair) CRC Press, Taylor and Francis (2015).

#### **Papers in professional journals published in English.**

1. V.M. Entov and A.L. Yarin, "The dynamics of thin liquid jets in air", *J. Fluid Mech.* 140, 91-111 (1984).
2. V.B. Librovich and A.L. Yarin, "Problems of the mechanical strength in the combustion theory", *Archivum Combustionis*, 8, No. 2, 79 - 99 (1988).
3. A. Yarin, V.I. Rusinov, P. Gospodinov and St. Radev, "Quasi one-dimensional model of drawing of glass microcapillaries and approximate solutions", *Theoretical and Applied Mechanics*, 20, No. 3, 55-62 (1989).
4. A.L. Yarin, "Strong flows of polymeric liquids: 1. Rheological behavior", *J. Non -Newtonian Fluid Mechanics*, 37, No. 2 + 3, 113 - 138 (1990).

5. A.L. Yarin, "Strong flows of polymeric liquids: 2. Mechanical degradation of macromolecules", *J. Non-Newtonian Fluid Mechanics*, 38, No. 2 + 3, 127-136 (1991).
6. J. Doupovec and A.L. Yarin, "Nonsymmetrical modified chemical vapor deposition (N-MCVD) process", *J. Lightwave Technology*, 9, No. 6, 695-700 (1991).
7. A. Yarin, "The collective effect in disperse systems - an approach based on the renormalization group technique", *Theoretical and Applied Mechanics*, 22, No. 2, 55-60 (1991).
8. St. Radev, P. Gospodinov, V.I. Roussinov and A.L. Yarin, "Determination of the activation energy during drawing of optical fibers", *Theoret. and Appl. Mechanics*, v. 23, No. 2, 79-84 (1992).
9. V. Bernat and A.L. Yarin, "Analytical solution for stresses and material birefringence in optical fibers with noncircular cladding", *J. Lightwave Technology*, 10, No. 4, 413-417 (1992).
10. A.L. Yarin and T.L. Nudlina, "Thermophoretic deposition of fine particles from longitudinal flow over a cylinder", *J. Aerosol Sci.*, 23, No. 2, 87-95 (1992).
11. E. Miller, A.L. Yarin and Y. Goldman, "Competition between thermophoretic deposition and erosion leading to appearance of steady coating", *J. Aerosol Sci.*, 23, No. 2, 97 - 113 (1992).
12. A.L. Yarin, "Flow-induced on-line crystallization of rodlike molecules in fibre spinning", *J. Applied Polymer Sci.* 46, No. 5, 873-878 (1992).
13. A.L. Yarin, A. Oron and Ph. Rosenau, "Capillary instability of thin liquid film on a cylinder", *Phys. Fluids A*, 5, No. 1, 91-98 (1993).
14. A.L. Yarin, V. Bernat, J. Doupovec and P. Miklos, "The viscous collapse of radial nonsymmetric composite tubes", *J. Lightwave Technology*, 11, No. 2, 198-204 (1993).
15. B. Tchavdarov, A.L. Yarin and S. Radev, "Buckling of thin liquid jets". *J. Fluid Mech.*, v. 253, 593-615 (1993).
16. M.B. Rubin and A.L. Yarin, "On the relationship between phenomenological models for elastic-viscoplastic metals and polymeric liquids". *J. Non-Newton. Fluid Mech.*, v. 50, No. 1, 79-88 (1993); Corrigendum: *J. Non-Newton. Fluid Mech.*, v.57, n2/3, 321 (1995).
17. A.L. Yarin, "Instability of rapidly evaporating liquid jets and droplets". Max-Planck-Institut für Strömungsforschung, Bericht, 7/1993, Göttingen (1993).
18. A.L. Yarin, P. Gospodinov and V.I. Roussinov, "Stability loss and sensitivity in hollow fiber drawing". *Phys. Fluids*, v. 6, No. 4, 1454-1463 (1994).
19. A.L. Yarin, "On instability of rapidly stretching metal jet produced by shaped charges", *Int. J. Engineering Sci.*, v. 32, No. 5, 847-862 (1994).
20. A.L. Yarin, A. Arkadyev and P. Bar-Yoseph, "Coating growth on turbine blade in polydisperse particle - hot gas flow". *Int. J. Turbo & Jet Engines*, 11, No. 2 + 3, 243-247 (1994).
21. E. Moses, P. Bar-Yoseph and A. Yarin, "On finite element solutions of boundary layer equations", *Computational Fluid Dynam. J.*, v. 3, No. 2, 139-160 (1994).

22. A.L. Yarin and D.A. Weiss, "Impact of drops on solid surfaces: self-similar capillary waves, and splashing as a new type of kinematic discontinuity", *J. Fluid Mech.*, v. 283, 141-173 (1995).
23. A.L. Yarin, "Surface-tension-driven low Reynolds number flows arising in optoelectronic technology", *J. Fluid Mech.*, v. 286, 173-200 (1995).
24. E. Moses, A.L. Yarin and P. Bar-Yoseph, "On knocking prediction in spark ignition engines". *Combustion & Flame*, v. 101, No. 3, 239-261 (1995).
25. P. Bar-Yoseph, E. Moses, U. Zrahia and A.L. Yarin, "Space-time spectral elements method for one-dimensional diffusion-convection problems", *J. Comput. Phys.*, v.119, 62-74 (1995).
26. A.L. Yarin, M.B. Rubin and I.V. Roisman, "Penetration of a rigid projectile into an elastic-plastic target of finite thickness", *Int. J. Impact Eng.*, v. 16, No. 5/6, 801-831 (1995).
27. A.L. Yarin and B. Tchavdarov, "Onset of folding in plane liquid films", *J. Fluid Mech.*, v. 307, 85-99 (1996).
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7. T.L. Nudlina and A.L. Yarin, "Aerodynamics of a torch generating soot particles", *Proceeding of the 6th All-Union Scientific Meeting on Theoretical and applied aspects of turbulent flows*, Tallinn, part 2, pp. 220 - 222, 1989.
8. V.M. Entov and A.L. Yarin, "Hydrodynamic problems of fibre spinning and film forming", *Abstracts of the 5th Annual Meeting of the Polymer Processing Society*, Kyoto, p. 116, 1989.
9. V.V. Grigoryants, G.A. Ivanov, Yu. K. Chamorovskii and A. L. Yarin, "Forming of high birefringent single-mode fibre", *Abstracts of the Joint USSR-USA workshop "Electrooptics"*, Moscow, pp. 8-9, 1989.
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12. A.L. Yarin, "The structure of concentrated polymer solutions and melts and the rheological behavior of elastoviscous liquids in the technological processes" In: *"Hydromechanics and Heat and Mass Transfer in the Processes of New Materials Design"*, (Lectures presented at the 6th All-Union Congress on Theoretical and Applied Mechanics), Moscow, pp. 212-223, 1990.
13. A. L. Yarin, "Mechanical degradation of macromolecules in flows of polymeric liquid". *Abstracts of the 6th Annual Meeting of the Polymer Processing Society*, Nice, 1990.

14. A.L. Yarin, B. Tchavdarov and S. Radev, "Eigenvalue problems in the theory of thin jets buckling", Proceedings of the 1st ISAIF, Beijing '90, pp. 298-304, World Publishing Corporation, 1990.
15. A.V. Bazilevsky, V.M. Entov, A.N. Rozhkov and A.L. Yarin, "Polymeric jets beads-on-string breakup and related phenomena". Processing of the Golden Jubilee Meeting of the British Society of Rheology and Third European Rheology Conference, Edinburgh, U.K., 44-46, 1990.
16. B.M. Tchavdarov, S.P. Radev and A.L. Yarin, "Quasi-one-dimensional analysis of jet buckling", Proceedings of Twentieth Spring Conference of the Union of Bulgarian Mathematicians. pp. 71-79, Varna, 1991.
17. B. Tchavdarov, S. Radev and A. Yarin, "Numerical analysis of high-viscosity jet buckling". Proceedings of the Sixth European Conference on Mathematics in Industry, Limerick 1991; B.G. Teubner, Stuttgart, pp. 279-282, 1992.
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19. E. Moses, A. Yarin and P. Bar-Yoseph, "On the prediction of knocking in spark ignition engines", Proceedings of the 24th Israel Conference on Mechanical Engineering, Haifa, pp. 1-3, 1992.
20. A.L. Yarin, "Thermophoretic deposition of fine particles from longitudinal flow over a cylinder", Proceedings of the 25th Israel Conference on Mechanical Engineering, Haifa, p. 75, 1994.
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  60. A.L. Yarin. Cooling High-Power Microelectronic Devices in Ground and Space Applications Using Nanofibers and Nanoparticles. Proceedings of The 11<sup>th</sup> International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, 20-23 July, Kruger National Park, South Africa, pp. 466-480 (2015).
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**Patents**

- 1) N 272296 USSR
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- 4) United States Patent 7,147,694. D. Reneker, A.L. Yarin and W. Liu. Fibrous media utilizing temperature gradient and methods of use thereof.
- 5) United States Patent 8,636,493 B2 D.H. Reneker, T. Han, A.L. Yarin. Method of characterization of viscoelastic stress in elongated flow materials.
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- 7) United States Patent 8,108,157. G.G. Chase, A. Yarin, M.K. Tiwari, C.M. Megaridis Electrospun fibrous nanocomposites as permeable, flexible strain sensors.
- 8) WO 2010/141482 A2 (WO Patent 2,010,141,482). International Patent Application Publication: A. Yarin, S. Raman, T. Gambaryan-Roisman. Nanofiber covered micro components and method for micro component cooling.
- 9) US Patent App. 13/273,719. A. Yarin, S. Raman, T. Gambaryan-Roisman, S. Sinha-Ray, Y. Zhang. Nanofiber covered micro components and method for micro component cooling, 2011.
- 10) United States Patent US 9,469,920 B2: M.W. Lee, S.S. Yoon, A.L. Yarin, S. Sinha-Ray, B. Pourdeyhimi. Electrospinning device.
- 11) Tech ID 2020-085: A.L. Yarin, Y. Pan “Electric-field assisted drop and jet control in 3D printing and direct writing” PPA 63/032,555.

### Professional reports and research reports

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2. A.L. Yarin and A. Stotter, "Investigation of the effect of admixtures into fuel on the flame propagation rate in closed vessels", Report to MANLAM # 030-925, 54 pp., 1992.
3. A.L. Yarin, A. Oron and P. Rosenau, "A capillary instability of a thin liquid film on a cylinder - a route to development of the foundations of a new technology of high temperature superconductor", Report to MANLAM # 030-985, 29 pp., 1993.
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5. A.L. Yarin, "Buckling of thin liquid jets", Report to MANLAM # 030-011, 49 + 25 pp., 1993.
6. A.L. Yarin, "Final report on research and academic activities during academic years 1991/4", Report to the Rashi Foundation, 20 pp., 1994.
7. A.L. Yarin, M.B. Rubin and I.V. Roisman, "Penetration of a rigid projectile into an elastic-plastic target of finite thickness", Report to MANLAM #030-031, 65 pp., 1994.
8. A.L. Yarin and M.B. Rubin, "Normal and oblique penetration of rigid and eroding projectiles into elastic-plastic target including a description of fragmentation", Report to MAFAT (MANLAM # 030-986), 16 pp., 1994.
9. A.L. Yarin, A. Gelfgat and P. Bar-Yoseph, "Investigation of hydrodynamic stability of natural convection under the action of thermocapillarity and electromagnetic forces in the problems related to crystal growth techniques", Annual report to MANLAM # 030-026, 2 pp., 1994.
10. M. Marengo, C. Tropea and A.L. Yarin, "Analysis of a metered reverse coating system", Lehrstuhl für Strömungsmechanik. Technische Fakultät, Friedrich-Alexander-Universität Erlangen-Nürnberg. 24 pp., 1996.
11. A.L. Yarin, M.B. Rubin and I.V. Roisman, "Model of oblique penetration of a rigid projectile into an elastic-plastic target including an engineering approximation for the penetration process", Report to MAFAT (MANLAM #030-986) 47 pp., 1996.
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13. A.L. Yarin, G. Brenn, M. Stelter, and F. Durst, "Gerät zur Messung des Dehnverhaltens von nicht-Newtonischen Flüssigkeiten mit medizinischer Relevanz", Research report of LSTM - University of Erlangen, Nurnberg, Germany.
14. M. Stelter, G. Brenn, A.L. Yarin, and F. Durst, "Untersuchungen über die Einsatzmöglichkeit eines neu entwickelten Dehnrheometers für medizinische Zwecke", Research report of LSTM - University of Erlangen - Nürnberg, Germany, 44 pp., 1998.
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18. A.L. Yarin, T. Milloh and E. Zussman, "Nanofibers for applications in MEMS and nanotechnology", Interim report to the Israel Science Foundation, 83 pp., 2002.
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20. E. Bar-Ziv, A.L. Yarin, C. Tropea, G. Brenn, and F. Durst, "Interfacial phenomena in dispersed two-phase flow", Final Scientific Report to GIF, 300 pp., 2003.
21. A.L. Yarin, S.N. Reznik, "Cooling of thermal sources in the case of extremely high heat fluxes", Reports to Soreq Nuclear Research Center, 2002, 2003, 2004; Final report-2005 (500 pp in total).
22. A.L. Yarin, T. Milloh and E. Zussman, "Nanofibers for applications in MEMS and nanotechnology", Final report to the Israel Science Foundation, 600 pp., 2004.
23. J.H. Wendorff, A. Greiner, A. Yarin, E. Zussman. Interim and Final reports to Volkswagen Foundation on the project "Functional Composite Nanofibers by Co-electrospinning" within the initiative "Komplexe Materialien: Verbundprojecte der Natur-, Ingenieur-, und Biowissenschaften", 2005, 2006, 2007.

### **Participation in Translations**

from English to Russian

1. Swimming and Flying in Nature (eds. Th. Wu, Ch. Brokaw, Ch. Brenner) - published by "Mir Publishers" in Russian, 1980, Moscow.
2. Modern Hydrodynamics: Advances and Problems (Translation of a Special Issue celebrating the 25th anniversary of J. Fluid Mech.) - Published by "Mir Publishers" in Russian, 1984, Moscow.

### **Invited Talks**

1. International Seminar "Mechanics and Physics of Plasma and Gas Flow - Aerodynamics of Combustion", Riga, USSR, 1986.
2. 5th National Symposium on "Optical Fibres and Their Applications", Warsaw, Poland, 1989.
3. 6th National Congress on Theoretical and Applied Mechanics, Varna, Bulgaria, 1989.
4. International workshop "Boiling", Bruxelles, Belgium, 1993.
5. Ben Gurion University of the Negev, Beer-Sheva, 1991, 1999.
6. Tel-Aviv University, 1992, 2001.

7. Hebrew University, Jerusalem, 1998.
8. A Newton Institute Euroconference "Constitutive Relations and their Applications", Cambridge, U.K., 1996.
9. Institute of Physics, Slovak Academy of Sciences, Bratislava, Czechoslovakia, 1989, 1990.
10. Institut für Strömungslehre und Wärmeübertragung. Technische Universität Wien, Austria, 1990.
11. Max-Planck-Institut für Strömungsforschung, Göttingen, Germany, 1992, 1993, 1994.
12. Laboratoire PMMH, ESPCI, French Academy of Sciences, Paris, 1994.
13. University of Erlangen - Nurnberg, Erlangen, Germany, 1994, 1995, 1997, 2000.
14. Rheology Research Center, University of Wisconsin - Madison, U.S.A., 1996, 2000, 2004.
15. University of Cambridge, Newton Institute, Cambridge, U.K., 1996.
16. University of Akron, U.S.A., 1997, 1999, 2000, 2001, 2005, 2008.
17. Northwestern University, Chicago, U.S.A., 1997, 2007, 2017.
18. The University of Illinois at Chicago, Chicago, U.S.A., 1997, 2005.
19. Massachusetts Institute of Technology, Boston, 1997, 2004.
20. University of Southern California, Los-Angeles, U.S.A., 1997, 2004.
21. University of Michigan, Ann-Arbor, U.S.A., 1997.
22. Technical University of Darmstadt, Darmstadt, Germany, 1998, 2000, 2003, 2008.
23. University of Nebraska, Lincoln, Nebraska, U.S.A., 1999, 2006.
24. Istanbul Technical University, Istanbul, Turkey, 1999.
25. National Cheng Kung University, Tainan, Taiwan, R.O.C., 2000.
26. National Taiwan University, Taipei, Taiwan, R.O.C., 2000.
27. Scitex Digital Printing, Inc., Dayton, OH, USA, 2001.
28. Institute of Thermomechanics, Czech Acad. Sci., Prague, Czech. Republic, 2001.
29. Bi-National Israel-Britain Workshop on "Applied Mathematical Methods in Spray Combustion", Beer-Sheva, Israel, 2001.
30. Case Western Reserve University, Cleveland, U.S.A., 2002.
31. National University of Singapore, Singapore, 2002, 2005, 2010.
32. Centre of Excellence for Advanced Materials and Structures and Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland 2002.

33. The German-Israeli Workshop, Nanochemistry-2002, Eilat, Israel, 2002.
34. The Levich Institute, City College of CUNY, New York, U.S.A., 2003.
35. Drexel University, Philadelphia, U.S.A., 2003.
36. University of Arizona, Tucson, U.S.A., 2004.
37. Illinois Institute of Technology, Chicago, U.S.A., 2004,2005.
38. Virginia Polytechnic Institute and State University (Virginia Tech.), Blacksburg, U.S.A., 2004.
39. 2<sup>nd</sup> International Conference on Complex Materials, Stuttgart, Germany, 2005.
40. 25<sup>th</sup> German-Israeli Conference, Dresden, Germany, 2005.
41. University of Chicago, 2006.
42. "Donaldson", Company, Minneapolis, 2006.
43. "3M", Company, Minneapolis, 2006; 2012.
44. North Carolina State University, MemFAST Meeting, 2007.
45. ETH, Zurich, Switzerland, 2007.
46. Master Class on "Near-wall Interfacial Transport Phenomena"- Technical University of Darmstadt, 2008.
47. Seminar "Optische Messtechniken fuer die Charakterisierung von Transportprozessen an Grenzflaechen", Hirshegg-Kleinwalsertal, Austria, 2008.
48. University of Notre Dame, Notre Dame, USA, 2008.
49. International Workshop "Electrostatic Atomization of Electrically Insulating Liquids: Principles and Applications", Southampton, UK, March 2009.
50. Workshop at Hewlett-Packard-Indigo, Company, Rehovot, Israel, May 2009.
51. Technion-Israel Institute of Technology, Haifa, May 2009; December 2010; January 2016, December 2016.
52. Phillips-Universitat Marburg, Germany, July 2009.
53. Eindhoven University, Holland, September 2009.
54. Fourth International Meeting on Nanotechnology, Guadalajara, Mexico, July 2009.
55. Tokyo Institute of Technology, May 2010.
56. 16th European Conference on Mathematics for Industry, Wuppertal, Germany, July, 2010.

57. Fraunhofer Institute, Kaiserslautern, Germany, August 2010.
58. 8th Central European Symposium on Pharmaceutical Technology, September 2010, Graz, Austria
59. Technical University of Graz, September 2010, Austria.
60. The 57th AVS International Symposium, Albuquerque, NM, October, 2010, USA.
61. Using Sources of Hard X-Rays, Chicago, Argonne National Laboratory.
62. Wayne State University, Detroit, March 2011.
63. North Dakota State University, Fargo, North Dakota, April 2011.
64. 18<sup>th</sup> Ostwald Kolloquium, Mainz, Germany, May 16-18, 2011.
65. Institute of Fundamental Technical Problems, Polish Academy of Sciences, May 2011.
66. Korea University, Seoul, S. Korea, July 2011.
67. Seoul National University, Seoul, S. Korea, July 2011, July 2013.
  
68. Max-Planck-Institut für Polymerforschung, Mainz, Germany, February 2012.
69. Southeast University, Nanjing, China, July 2012.
70. Michigan Technological University, October, 2012.
71. Worcester Polytechnic Institute, January, 2013.
72. North Carolina State University, October, 2013.
73. University of Minnesota, Minneapolis, February, 2014.
74. United States Gypsum Research Facility, August, 2014.
75. California State University Northridge, February, 2015.
76. Iowa State University, Ames, April 2015.
77. University of Bayreuth, Germany, March 2016.
78. The University of Sydney, Australia, June 2016.
79. Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia, June 2016.
80. University of Canterbury, Christchurch, New Zealand, June 2016.
81. The University of Auckland, Auckland, New Zealand, June 2016.
82. Cambridge University, Cambridge, U.K., September 2016.



83. Technical University Darmstadt, Darmstadt, Germany, February 2017.
84. University of Lisbon, Lisbon, Portugal, June 2017.
85. University of Seville, Spain, June 2017.
86. Korea Institute of Science and Technology (KIST), Jeonbuk branch, South Korea, July 2017.
87. Kyoto Institute of Technology, Japan, June 2018.
88. National Nanotechnology Laboratory for Agrobusiness (Embrapa). Sao Carlos, Brazil, August 2018.
89. Clemson University, February 2019.
90. Korea University, May 2019.
91. Korea Institute of Science and Technology (KIST), Jeonbuk branch, South Korea, June 2019.
92. Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland, July 2019.
93. AGH University of Science and Technology, Krakow, Poland, July 2019.
94. University of Mar Del Plata, Division Polimeros Biomedicos, INTEMA CONICET, Mar Del Plata, Argentina, December 2019.
95. Georgia Tech (Georgia Institute of Technology), Atlanta, USA, February, 2021.
96. Sungkyunkwan University (S. Korea), Aug. 19, 2021.
97. Imperial College, London, UK, March 25, 2022.
98. Ozyegin University, Istanbul, Turkey, May 13, 2022.
99. University of Nebraska, Omaha, Nebraska, U.S.A., Sept. 16, 2022.

### **Participation in international congresses**

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|---------------|--|
| November 1986 | Second International Colloquium on Dust Explosions. Jadwisin, Poland (the paper was accepted and published).               |
| 1987          | 18th Symposium on Advanced Problems and Methods in Fluid Mechanics, Warsaw, Poland (the paper was accepted and published). |

- February 1989 5th National Symposium on "Optical Fibres and Their Applications", Warsaw, Poland.
- April 1989 5th Annual Meeting of the Polymer Processing Society, Kyoto, Japan (the paper was accepted and published).
- September 1989 6th National Congress on Theoretical and Applied Mechanics, Bulgaria, Varna.
- April 1990 6th Annual Meeting of the Polymer Processing Society, Nice, France (the paper was accepted and published).
- July 1990 1st ISAIF, Beijing, China (the paper was accepted and published).
- August 1990 Ninth International Heat Transfer Conference, Jerusalem, Israel.
- September 1990 Golden Jubilee Meeting of the British Society of Rheology and Third European Rheology Conference, Edinburgh, U.K. (the paper was accepted and published).
- August 1991 International Conference on Hydrodynamics of Technological Processes for Materials Production, Sofia, Bulgaria (the paper was presented by the coauthor).
- August 1991 6th Annual Conference of the European Consortium of Mathematics in Industry (ECMI), Limerick, Ireland (the paper was presented by the coauthor).
- September 1991 1st European Fluid Mechanics Conference, Cambridge, U.K.
- January 1992 International Conference on Heterogeneous Combustion, Dead Sea, Israel.
- August 1992 XVIII International Congress of Theoretical and Applied Mechanics, Haifa, Israel (speaker and a member of the Local Organizing Committee).
- September 1993 International workshop "Boiling" held in the Université Libre de Bruxelles.
- September 1994 2nd European Fluid Mechanics Conference, Warsaw, Poland (the paper was accepted and presented by the coauthor).
- April 1995 Euromech Colloquium 332 - Drag Reduction, Ravello, Italy.
- May 1995 15th International Symposium on Ballistics, Jerusalem, Israel.
- July 1995 3rd International Congress on Industrial and Applied Mathematics, Hamburg, Germany.
- September 1995 1st World Congress on Ultrasonics, Berlin, Germany (the paper was presented by the coauthor).
- April 1996 A Newton Institute Euroconference "Constitutive Relations and their Applications", Cambridge, U.K.
- July 1996 The Second World Congress of Nonlinear Analysis, Athens, Greece.
- July 1996 The ASME Fluids Engineering Division Summer Meeting, San Diego, California, U.S.A. (the paper was presented by the coauthor).
- August 1996 XIX International Congress of Theoretical and Applied Mechanics, Kyoto, Japan (the paper was presented by the coauthor).

- September 1996 Euromech Colloquium 355 - Interfacial Instabilities, Palaiseau, Paris, France (the paper was accepted and presented by the coauthor).
- November 1996 Annual Meeting of the American Institute of Chemical Engineering (AIChE), Chicago, USA.
- March 1997 Annual meeting of the 'Gesellschaft für Angewandte Mathematik und Mechanik' - GAMM, Regensburg, Germany (the paper was presented by the coauthor).
- May 1997 International Symposium on Advances in Computational Heat Transfer, Cesme, Izmir, Turkey, 1997 (the paper was presented by a coauthor).
- July 1997 Euromech 367 - 2nd European Coating Symposium, Strasbourg, France (the paper was presented by the coauthor).
- August 1997 The 7th International Conference on Liquid Atomization and Spray Systems (ICLASS '97), Seoul, Korea (the paper was presented by the coauthor).
- September 1997 3rd 'European Fluid Mechanics Conference, Göttingen, Germany (the paper was presented by the coauthor).
- November 1997 Applications of Power Ultrasound in Physical and Chemical Processing. Toulouse, France (the paper was presented by the coauthor).
- March 1998 Interne Arbeitssitzungen der GVC-Fachausschüsse "Kristallisation", "Mehrphasenströmungen", "Technische Reaktionsführung" (GVC)/ "Technische Reaktionen" (DECHEMA), "Mischvorgänge", "Rheologie" and "Wärme- und Stoffübertragung" vom 2. bis 6. März 1998 in Aachen, Germany (the paper was presented by a coauthor).
- June 1998 3rd International Conference on Multiphase Flow 98, Lyon, France.
- July 1998 14th Annual Conference on Liquid Atomization and Spray Systems, Manchester, England (the paper was presented by a coauthor).
- July 1998 Workshop "Liquid Interface Interactions: Drop-wall and Drop-drop Impacts". Techn. Univ. Darmstadt, Germany.
- August 1998 11th International Heat Transfer Conference, Korea (the paper was presented by a coauthor).
- September 1998 8th International Symposium on Flow Visualization, Sorrento, Italy.
- March 1999 GVC meeting in Bad Kissingen, Germany (the paper was presented by a coauthor).
- February 2000 GVC workshop in Baden-Baden "Rheologie" (the paper was presented by a coauthor).
- July 2000 8<sup>th</sup> International Conference on Liquid Atomization and Spray Systems (ICLASS'2000), Pasadena, U.S.A., (the paper was presented by a coauthor).

- August 2000 XX International Congress of Theoretical and Applied Mechanics, Chicago, U.S.A.
- September 2000 16<sup>th</sup> Annual Conf. on Liquid Atomization and Spray Systems, Darmstadt, Germany (the paper was presented by a coauthor).
- November 2000 4<sup>th</sup> Euromech Fluid Mechanics Conference, Eindhoven, Holland.
- January 2001 9<sup>th</sup> Polychar World Forum on Polymer Applications and Theory, Denton, TX, U.S.A. (the paper was presented by a coauthor).
- February 2001 GVC workshop in Weimar "Rheologie" (the paper was presented by a coauthor).
- March 2001 GVC workshop in Raderborn "Trocknungstechnik" (the paper was presented by a coauthor).
- May 2001 The Fiber Society Spring 2001 Meeting "New Frontiers in Fiber-Based Products", Raleigh, NC, U.S.A.
- September 2001 ILASS-Europe 2001, Zurich, Sept. 2-6, Switzerland
- November 2001 AIChE National Meeting, Reno, NV, November 4-9, 2001 (the work was presented by a coauthor).
- December 2001 Bi-National Israel-Britain Workshop on "Applied Mathematical Methods in Spray Combustion", Beer-Sheva, Israel.
- 2002 10<sup>th</sup> Polychar World Forum on Polymer Applications and Theory.
- August 2002 IEEE-NANO'2002, Second Conference on Nanotechnology, Aug. 26-28, Washington DC, USA.
- September 2002 ILASS-Europe 2002, Zaragoza, Sept.9-11, Spain.
- November 2002 The German-Israeli Workshop, Nanochemistry-2002, Eilat, Israel.
- August 2003 The 5<sup>th</sup> Euromech Fluid Mechanics Conference, Toulouse, Aug. 24-28, France
- September 2003 226<sup>th</sup> American Chemical Society Meeting, New York, Sept.7-11, U.S.A.
- March 2004 Annual APS March Meeting, Montreal, Canada, 2004.
- 2004 The NT'04 International Conference on the Science and Application of Nanotubes, San Luis Potosi, Mexico, 2004.
- August 2004 21<sup>th</sup> International Congress of Theoretical and Applied Mechanics, Warsaw, Poland
- August 2004 Symposium and Exhibition, AUVSI's Unmanned Systems, North America 2004, Anaheim, California, U.S.A., Aug. 3-5, 2004
- June 2005 2<sup>nd</sup> International Conference on Complex Materials, Stuttgart, Germany, 2005.
- June 2005 25<sup>th</sup> German-Israeli Conference, Dresden, Germany, 2005.
- September 2005 Biomedical Engineering Society Annual Fall Meeting, Baltimore,

- USA, 2005 (the work was presented by the coauthor).
- November 2005 American Physical Society meeting at Chicago, Minisymposium "Fluid Transport in Nanotubes and Nanochannels" (the work was presented by the coauthor).
- October 2006 Biomedical Engineering Society Annual Fall Meeting, Chicago, USA, 2006 (the work was presented by the coauthor).
- November 2006 ASME Congress, Chicago, USA.
- April 2007 MRS Spring Meeting, San Francisco, CA, USA, April 9-13 (the work was presented by the student).
- October 2007 Conference on Advanced Fibers and Polymer Materials, Shanghai, China, Oct. 15-17 (the work was presented by a coauthors).
- May 2008 International Graz Congress for Pharmaceutical Engineering, Graz, Austria (the work was presented by my coauthor).
- October 2008 ASME International Manufacturing Science and Engineering Conference, Collocated with the 3<sup>rd</sup> JSME/ASME International Conference on Materials and Processing Chicago (the works were presented by the students).
- March 2009 Electrostatic Atomization of Electrically Insulating Liquid: Principles and Applications. International Workshop. Southampton UK, March 2-3. (invited speaker)
- April 2009 MRS Spring Meeting. San Francisco, CA, USA, April 13-17, (the work was presented by the student).
- July 2009 European Polymer Congress 09, July 12-17, Graz, Austria (the work was presented by my coauthor).
- July 2009 Fourth International Meeting on Nanotechnology, Guadalajara, Mexico.
- November 2009 62nd Annual Meeting of the APS Division of Fluid, Minneapolis, USA, 2009.
- March 2010 American Physical Society Meeting, Portland, Oregon, USA.
- May-June 2010 7 th International Conference on Multiphase Flow 2010 (ICMF-2010), Tampa, Florida, USA.
- June 2010 Third International Conference on Porous Media and its Applications in Science, Engineering and Industry, Montecatini, Italy.
- July 2010 16th European Conference on Mathematics for Industry, Wuppertal, Germany.
- August 2010 Nanofibers for the 3<sup>rd</sup> Millenium, Raleigh, N.C.

- September 2010 8<sup>th</sup> Central European Symposium on Pharmaceutical Technology 2010, Graz, Austria (keynote speaker).
- October 2010 Workshop on Evolution and Control of Complexity: Key Experiments. Using Sources of Hard X-Rays, Chicago, Argonne National Laboratory.
- April 2011 Materials Research Society, Spring Meeting, April 25-29, San Francisco, USA.
- May 2011 18<sup>th</sup> Ostwald Kolloquium, Mainz, Germany, May 16-18, 2011 (invited speaker).
- August 2011 Fibers&Thermoplastics, USB TAP Meeting, Raleigh, N.C., Aug. 2-3, 2011.
- August 2011 Nanofibers for the 3<sup>rd</sup> Millenium, Raleigh, N.C., Aug. 29-31, 2011.
- May-June 2012 2<sup>nd</sup> International Conference on Electrospinning, Jeju, S. Korea, May 29-June 1 (keynote speaker).
- July 2012 ASME 2012 Summer Heat Transfer Conference HT2012 July 8-12, 2012, Rio Grande, Puerto Rico.
- July 2012 III National Conference of Nano and Micromechanics, Warsaw, Poland, July 4-6 (invited speaker).
- September 2012 MSE 2012 Conference in Darmstadt, Germany (25-27 September).
- 2011 Nanotechnology Materials and Devices Conference (NMDC), 2012 IEEE
- April 2013 Materials Research Society Spring Meeting, San Francisco, USA
- May 2013 International Workshop “Mathematics of Splashing” at the International Centre for Mathematical Sciences (Edinburgh, UK); May 28-31 (invited speaker).
- September 2013 13<sup>th</sup> International Symposium on Polymeric Materials, Bayreuth, Germany (invited speaker).
- November 2013 66<sup>th</sup> Annual APS-DFD Meeting, November 24-26, 2013, Pittsburg
- March 2014 American Physical Society (APS) Meeting, Denver
- June 2014 Fluid Mechanics Colloquium and Celebration on the occasion of the 60<sup>th</sup> birthday of Prof. Dr.-Ing. Cameron Tropea (invited speaker)
- July 2014 International Workshop on Electrospinning for High Performance Applications. Donghua University, Shanghai, China (invited speaker).

- August 2014 3<sup>rd</sup> International Conference on Electrospinning, San Francisco, USA, Aug. 4-7 (keynote speaker).
- September 2014 International Centre of Mechanical Studies, Udine, Italy, Sept. 1-5. Course “Electrospinning: Exploiting Electrohydrodynamics and Rheology for the Control of Nanofibers Structural and Physical Properties” (keynote speaker).
- October 2014 American Filtration and Separations Society. Next Generation Filter Media Conference. Chicago, USA, October 14-15.
- October 2014 30<sup>th</sup> Annual meeting of the American Society for Gravitational and Space Research, Pasadena, USA, October 22-26.
- February 2015 Research, Innovation & Science for Engineered Fabrics Conference and Nanofibers for the Third Millenium (RISE & N3M), Miami, USA, February 9-12.
- May 2015 The 15<sup>th</sup> Conference of the International Association of Colloid and Interface Scientists in Mainz, Germany (keynote speaker), May 24-29.
- July 2015 The 11<sup>th</sup> International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, 20-23 July, Kruger National Park, South Africa (keynote speaker).
- August 2015 ASME 2015: Joint International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) and the International Conference on Nanochannels, Microchannels and Minichannels (ICNMM), San Francisco, USA.
- September 2015 International Conference NART-2015: Nanofibers, Applications and Related Technologies, Liberec, The Czech Republic, Sept 1-3, 2015 (keynote speaker).
- November 2015 31<sup>st</sup> Annual meeting of American Society for Gravitational and Space Research, Alexandria, Virginia, Nov. 10-14, 2015, U.S.A.
- November 2015 68<sup>th</sup> Annual Meeting of the American Physical Society, Division of Fluid Dynamics. 22-24 November 2015, Boston, U.S.A.
- March 2016 American Physical Society Meeting, Baltimore, March 14-18, U.S.A. (the work was presented by the student).
- April 2016 10<sup>TH</sup> World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology, 4-7 April, Glasgow, U.K. (the work was presented by the student).
- June-July 2016 The 4<sup>th</sup> International Conference Electrospin 2016, June 28-July 1, Otranto, Italy (invited speaker).

- June 2016 7th European Thermal-Sciences Conference, 19-23 June 2016, Krakow, Poland (the work was presented by the coauthor).
- September 2016 27<sup>th</sup> European Conference of Liquid Atomization and Spray Systems, 4-7 Sept. Brighton, U.K. (keynote speaker).
- September 2016 NART 2016, Nanofibers, Applications and Related Technologies, Sept. 13-15, Raleigh, NC, USA.
- October 2016 32<sup>th</sup> Annual meeting of the American Society for Gravitational and Space Research, Cleveland, USA, October 26-27.
- November 2016 69<sup>th</sup> American Physical Society Meeting, Division of Fluid Dynamics, Portland, USA.
- March 2017 American Physical Society Meeting, New Orleans, USA (the work was presented by the student).
- September 2017 The XVI Brazil Materials Research Society Meeting, Gramado, Brazil, September 10<sup>th</sup> to September 14<sup>th</sup> 2017, (Plenary Speaker).
- September 2017 International Conference NART-2017: Nanofibers, Applications and Related Technologies, Liberec, The Czech Republic, Sept 25-28, 2017 (plenary speaker).
- November 2017 American Physical Society Meeting, Division of Fluid Dynamics, Nov. 19-21 Denver, USA.
- November 2017 33<sup>th</sup> Annual meeting of the American Society for Gravitational and Space Research, Seattle, USA.
- January 2018 The 5<sup>th</sup> International Conference Electrospray 2018, January 16-January 18, Stellenbosch, South Africa (invited speaker).
- June 2018 The 7<sup>th</sup> World Congress on Biopolymers and Polymer Chemistry, Osaka, Japan, June 4-6 (keynote speaker).
- July 2018 ICLASS 2018: 14TH INTERNATIONAL CONFERENCE ON LIQUID ATOMIZATION & SPRAY SYSTEMS July 22-26, 2018 – Chicago, USA
- October 2018 Filtration2018, International Conference & Exposition, October 2-4, 2018, Philadelphia, USA (plenary speaker).
- November 2018 34<sup>th</sup> Annual meeting of the American Society for Gravitational and Space Research, Bethesda, Maryland, USA, October 31-Nov. 3, 2018.
- November 2018 71<sup>st</sup> American Physical Society Meeting, Division of Fluid Dynamics, Atlanta, USA.



- November 2018 2018-Sustainable Industrial Processing Summit&Exhibition, 4-7 November, 2018, Rio de Janeiro, Brazil (keynote speaker).
- July 2019 6<sup>th</sup> Conference on Nano- and Micromechanics, July 3-5, 2019, Rzeszow, Poland (keynote speaker).
- September 2019 International Conference NART-2019: Nanofibers, Applications and Related Technologies, Liberec, The Czech Republic, Sept 18-20, 2019 (keynote speaker).
- October 2019 NASA SLPSRA Fluid Physics Workshop, October 16-17, 2019, Cleveland, USA.
- November 2019 35<sup>th</sup> Annual meeting of the American Society for Gravitational and Space Denver, USA, November 23-Nov. 26, 2019.
- November 2019 72<sup>nd</sup> American Physical Society Meeting, Division of Fluid Dynamics, Seattle, Nov. 23-26, USA.
- February 2020 Filtration International Conference & Exposition, Feb. 25-27, 2020, Chicago, USA (keynote speaker).
- November 2020 73<sup>rd</sup> American Physical Society Meeting, Division of Fluid Dynamics, Chicago, Nov. 22-25, USA.
- April 13, 2021 Virtual World Dental Congress of the FDI World Dental Congress.
- July 2021 16<sup>th</sup> US National Congress on Computational Mechanics, July 25-29, 2021, Chicago, USA.
- August 19, 2021 Sungkyunkwan University (S. Korea). 2021 61<sup>st</sup> Summer Korean Vacuum Society Conference (keynote speaker).
- August 2021 ICLASS 2021, 15<sup>th</sup> Triennial International Conference on Liquid Atomization and Spray Systems, Edinburgh, UK, 29 Aug. - 2 Sept. 2021.
- August 2021 61<sup>st</sup> KVS: Online Distinguished Lecture Series for Young Scientists Sungkyunkwan University (S. Korea).
- September 2021 International Conference NART-2021: Nanofibers, Applications and Related Technologies, Istanbul, Turkey, Sept 8-10, 2021 (keynote speaker).
- November 2021 74<sup>nd</sup> American Physical Society Meeting, Division of Fluid Dynamics, Phoenix, USA.
- July 2022 International Centre of Mechanical Studies, Udine, Italy, July 18-22. Course “Materials and Electromechanical and Biomedical Devices Based on Nanofibers” (organizer and keynote speaker).
- November 2022 75<sup>th</sup> American Physical Society Meeting, Division of Fluid

Dynamics, Indianapolis, USA.

### **Graduate and postgraduate students supervision**

- 1977 V. Churlyayev - M.Sc. in Physical Engineering (joint supervision with Dr. V.M. Entov)
- 1982 - 1983 L. Semenova - M.Sc. in Physical Engineering (joint supervision with Dr. V. M. Entov)
- 1984 A. Naimanova - M.Sc. in Appl. Math. (joint supervision with Prof. K.E. Dzhaugashtin)
- 1985 G. Iskhakova - M.Sc. in Appl. Math. (joint supervision with Prof. K.E. Dzhaugashtin)
- 1984 - 1987 M. Murzabayev - Ph.D. (Candidate of Phys.- Math. Sciences) (joint supervision with Prof. K.E. Dzhaugashtin)
- 1985 - 1988 T. Getmanyuk - Ph.D. (Candidate of Chemical Sciences) (joint supervision with Prof. V.G. Kulichikhin)
- 1985 - 1988 Fam Khyu Ty - Ph.D. (Candidate of Phys.- Math. Sciences) (joint supervision with Dr. V.M. Entov)
- 1988 - 1990 T. Nudlina - Ph.D. (Candidate of Phys.- Math. Sciences) expected to graduate in 1990.
- 1987 - 1990 M. Kryuchkova - M.Sc. in Mech. Engineering
- 1990 - 1994 E. Moses (Ph.D. student, joint supervision with Prof. P. Bar-Yoseph)
- 1992 - 1994 I. Roisman (M.Sc. student)
- 1994 - 1995 D.A. Weiss (postdoctorant)
- 1994 - 1998 I. Roisman (Ph.D. student, joint supervision with Prof. M. Rubin)
- 1996 - 1998 M. Rozentswaig (M.Sc. student)
- 1996 - 2000 Sh. Kahana (M.Sc. student)
- 1997 - 1998 D. Lastochkin (Ph.D. student, joint supervision with Prof. Z. Tadmor)

1997 - 1998 D. Shavit (M.E. student)  
1998 - 2000 D. Shavit (M.Sc. student)  
1997 - 1999 G. Yosiphon (M.Sc. student)  
1998 - 2003 E. Gilboa (M.Sc. student)  
2001 - 2001 Y. Bendet-Rozer (M.E. student)  
2001 -2003 E. Eshkoli (PhD student, joint supervision with Prof. P. Bar-Yoseph)  
2001 - 2004 O. Feingold (M.E. student)  
2002- 2005 E. Katz (M.Sc. student)  
2002 - 2004 A. Noiberger (Ph.D. student, joint supervision with Prof. D. Rittel)  
2003- 2005 Z. Sobe (M.Sc. student)  
2005 - 2005 E. Katz (PhD student)  
2005 B. Sautter (PhD student)  
2006 –2010 S. Raman (PhD student)  
2006-2009 M. Tiwari (PhD student)  
2006-2008 K. Sun (PhD student)  
2006-2015 M. Mustafa (PhD student)  
2006-2007 A.V. Bazilevsky (postdoctorant)  
2007-2011 Suman Sinha-Ray (PhD student)  
2011-2013 Suman Sinha-Ray (postdoctorant)  
2006 D. Placke (postdoctorant)  
2008- 2012 Y. Zhang (PhD student)  
2008-2009 C. Steffes (PhD student)  
2008-2012 A. Lembach (PhD student)  
2010-2019 A. Kolbasov (PhD student)  
2010-2013 R. Sahu (PhD student)  
2014-2015 R. Sahu (postdoctorant)

2010-2013 S. Jun (PhD student)  
2010-2014 D. Pelot (PhD student)  
2010-2013 Sh. Khansari (PhD student)  
2011-2016 S. Sett (PhD student)  
2011-2016 Sumit Sinha-Ray (PhD student)  
2012-2013 M. Plakhotnyuk (MS student)  
2013- 2016 M.W. Lee (postdoctorant)  
2012-2019 A. Ghosal (PhD student)  
2014-2019 C. Staszal (PhD student)  
2014-2019 P. Comiskey (PhD student)  
2015-2019 W. Zhang (PhD student)  
2015- A. Sankaran (PhD student)  
2016- G. Li (PhD student)  
2017- K. Chen (PhD student)  
2012-2017 D. Dannessa (PhD student)  
2015-2016 S. Duzyer (postdoctorant)  
2016-2020 S. An (postdoctorant)  
2017- J. Plog (PhD student)  
2018- M. Hamphill (PhD student)  
2018-2020 P. Shinde (MS student)  
2019- Y. Dias (PhD student)  
2019- V. Kumar Balakrishnan (PhD student)  
2020- F. Varghese (MS student)  
2020- R. Granda (PhD student)  
2020- Y. Wang (PhD student)