December 2019

R E S U M E

Josué Sznitman
Israel ID number: 332505296
Citizenship: France, Israel, Switzerland
http://biofluids.technion.ac.il

ACADEMIC DEGREES

2008	Dr. Sc., Department of Mechanical & Process Engineering Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland
2003	MSc, Department of Mechanical & Process Engineering Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland
2002	BSc, Department of Mechanical Massachusetts Institute of Technology, Cambridge MA, USA

ACADEMIC APPOINTMENTS

10.2016 – present	Associate Professor (with tenure) Dept. of Biomedical Engineering Technion, Israel Institute of Technology
10.2010 – 10.2016	Assistant Professor Dept. of Biomedical Engineering Technion, Israel Institute of Technology
01.2009 – 08.2010	Lecturer and Research Associate Dept. of Mechanical & Aerospace Engineering Princeton University, Princeton NJ, USA
01.2008 – 12.2008	Postdoctoral fellow Dept. of Mechanical Engineering and Applied Mechanics University of Pennsylvania, Philadelphia PA, USA

PROFESSIONAL EXPERIENCE (outside academia)

10.2012 – present	Co-Founder, GradTrain, LLC (http://www.gradtrain.com)

RESEARCH INTERESTS

Josué Sznitman has established himself as a leading researcher in pulmonary physiology and drug delivery to the lungs. His scientific endorsements span early career recognition from leading societies (International Society of Aerosols in Medicine, Aerosol Society UK) to funding from

prominent Israeli national (ISF, MOST, MoH) and international bodies (European Commission). With a stronghold in the sciences of bio-transport and flows, his research combines advanced *in vitro* and *in silico* methodologies, and most recently *in vivo* animal models, to establish groundbreaking bioengineered lung models for respiratory disease characterization and therapeutic screening, with applicative outlooks towards precision medicine. His innovative approaches go beyond in challenging the underpinnings of respiratory therapy and break away from traditional paradigms of pulmonary drug delivery. This is best embodied with novel technologies including liquid-foam as a drug carrier for pulmonary surfactant delivery and targeted lung therapy using magnetic inhalation aerosols. Sznitman's efforts transcend scientific interdisciplinarity par excellence and the translational nature of his research endeavors is leading ingenious strategies to tackle therapeutic delivery for lung cancer, pulmonary obstructive disease, and infant and acute respiratory distress syndrome.

TEACHING EXPERIENCE

Transport Phenomena in Physiological Systems (**NEW**) - 337403
Level: undergraduate
Taught: Spring 2013 - present
Institution: Technion – Israel Institute of Technology
Comments: Teaching distinction (2013)

Respiratory Flows & Inhalation Therapy (**NEW**) - 336539
Level: undergraduate/graduate
Taught: Winter 2011-2012 - present
Institution: Technion – Israel Institute of Technology

Cardiovascular Flows & Blood Circulation (**NEW**) - 336541
Level: undergraduate/graduate
Taught: Spring 2012 - present
Institution: Technion – Israel Institute of Technology
Comments: also taught in Winter 2013-2014 within the M.E. program in Tel Aviv; in Spring 2014, was the highest enrollment course for 4th year undergraduates.

Integrated Engineering Science Laboratory – MAE 224
Level: undergraduate
Taught: Spring 2010
Institution: Princeton University

Introduction to Biological Fluid Mechanics (**NEW**) – MAE 234
Level: undergraduate
Taught: Winter 2009-2010
Institution: Princeton University

TECHNION ACTIVITIES

2019 – present	Senate Member, Technion
2019 – present	Technion committee for academic development, Committee Member
2018 – present	Director, Norman Seiden Multidisciplinary Graduate Program (RBNI)
2013 – 2018	Grand Technion Energy Program (GTEP), committee member
2015 – 2017	Computing and Information Systems, committee member

DEPARTMENTAL ACTIVITIES

2019 – present	Preparatory Committee Member
2017 – present	Associate Chair for Undergraduate Studies
2017 – present	Graduate Studies, Committee Member
2012 – present	Undergraduate Studies, Committee Member
2012 – 2016	Departmental seminars

PUBLIC PROFESSIONAL ACTIVITIES

2019 – present	Associate Editor, *Clinical Biomechanics* (Elsevier)
2018	Reviewer, H2020 FET
2017 – present	Editorial Board, *Journal of Biomechanics* (Elsevier)
2017	Panel Member, H2020 ERA-Net Program
2017 – present	Editorial Board, *Biomicrofluidics* (AIP)
2017	Guest Editor, Special Issue *Clinical Biomechanics*
2016	Guest Editor, Special Issue *Journal of Biomechanics*
2016	Binational Science Foundation (BSF), Panel for Biomedical Engineering
2016	Reviewer, Agence Nationale de Recherche (France)
2016	Reviewer, Israel Science Foundation
2016	Reviewer, ERC Consolidator Grant (H2020)
2015 – present	Short Term Scientific Mission (STSM) Coordinator, Cost Action MP1404
2015 – present	Management Committee, Cost Action MP1404 "SimInhale" (Horizon 2020)
2014 – present	Academic Editor, journal *PLoS One*
2014 – present	Reviewer, Marsden Fund – Royal Society of New Zealand
2014 – present	Reviewer, Netherlands Foundation for Fundamental Research on Matter (FOM)
2013 – present	Reviewer, Czech Science Foundation
2013 – present	Reviewer, Netherlands Organization for Scientific Research (NOW)
2011 – present	Vice Chairperson (Israel), MIT Educational Council

Reviewer for journals:
Annals of Biomedical Engineering, Journal of Visualization, J. of Fluid Mechanics, Theoretical and Computational Fluid Dynamics, Journal of Mechanical Engineering, Aerosol Science & Technology, Journal of Applied Physiology, ASME J. of Biomechanical Engineering, J. of Biomechanics, J. of Medical Physics, Technology and Health Care, Medical Engineering and Physics, International J. of Heat and Mass Transfer, Respiratory Care, PLoS One, PLoS Computational Biology, Computers in Biology and Medicine, Microfluidics and Nanofluidics, Biomicrofluidics, Journal of the Royal Society Interface, Nanomaterials, Scientific Reports, International J. of Numerical Methods in Biomedical Engineering, Physical Review Fluids, Journal of Computational Physics, Clinical Biomechanics, Pediatric Pulmonology, Micromachines, J. Micromechanics and Microengineering, RSC Biomaterials Science, European Journal of Pharmaceutical Sciences, Biomaterials, Langmuir, Analytical Chemistry, PNAS, Frontiers in Bioengineering & Biotechnology, ACS Biomaterials Science

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Physical Society (APS), Division of Fluid Dynamics (DFD)
European Respiratory Society (ERS)
European Society of Mechanics (Euromech)
American Society of Mechanical Engineers (ASME)
The Aerosol Society (UK)

European Society of Biomechanics (ESB)
International Society for Aerosols in Medicine (ISAM)
American Physiological Society (APS)

FELLOWSHIPS, AWARDS AND HONORS

2018 Emerging Scientist Award, Drug Delivery to the Lungs – The Aerosol Society (UK)
2018 Tan Chin Tuan Visiting Fellow (NTU, Singapore)
2017 Yanai Prize for Teaching Excellence (Technion)
2016 Herschel Rich Innovation Award (Technion)
2015 Young Investigator Award, International Society of Aerosols in Medicine (ISAM)
2015 JESH Visiting Fellow, Austrian Academy of Science (declined)
2015 U. & M. Halevy Grant for Innovative Applied Engineering Research (Technion)
2014 Best Paper Award, *Biomicrofluidics* (AIP Journal)
2014 Recipient, Henri Gutwirth Fund for the Promotion of Research (Technion)
2012 Bergmann Memorial Research Award (US-Israel Binational Science Foundation)
2010 Marcella S. Geltman Memorial Academic Lectureship Fund, Technion
2010 Horev Fellow, Leaders in Science & Technology (Taub Foundation)
2009 Princeton Council of Science & Technology, Fellow
2008 ETH Silver Medal for outstanding PhD thesis, ETH Zurich
2008 Research Award (PhD thesis), Swiss Society for Biomedical Engineering
2007 Visiting Student Research Collaborator, Princeton University
2007 John Bardeen Studentship, American Physical Society
2006 Young Scientist Award - 12th International Symposium on Flow Visualization
2006 Sigma Xi Scientific Research Society, Student Travel Award
2005 Young Research Award, Nestle SA – Swiss Pediatric Research
2005 American Physical Society (APS), Travel Award
2004 ETH Medaille (outstanding M.Sc. thesis), ETH Zurich
2002 Sigma Xi - The Scientific Research Society
2001 Tau Beta Pi - The Engineering Honor Society
2000 Pi Tau Sigma – Inter. Mechanical Engineering Honor Society

GRADUATE STUDENTS

Completed PhD theses

Lihi Shachar-Berman (2019, direct PhD track), *Transport and deposition of non-spherical particles in the pulmonary acinus*, Primary Supervisor: Josué Sznitman.

Yan Ostrovski (2018), *Targeted delivery of inhalation medicine using magnetic particles*, Primary Supervisor: Josué Sznitman

Hagit Stauber (2017, direct PhD track), *In vitro microfluidic models of alveolar capillary microcirculation*, Primary Supervisor: Josué Sznitman, Secondary Advisor: Dan Waisman (Faculty of Medicine).

Janna Tenenbaum-Katan (2016, direct PhD track), *Pulmonary alveolar flow physiology: from fetal to childhood airways*, Primary Supervisor: Josué Sznitman

Philipp Hofemeier (2016), *Computational simulations of transport and deposition of inhaled ultrafine aerosols in the distal regions of the lung*, Primary Supervisor: Josué Sznitman

Rami Fishler (2015), *A microfluidic platform for respiratory fluid dynamics and particle deposition in the pulmonary acinus,* Primary Supervisor: Josué Sznitman

Completed MSc theses
Yelena Koren (2014), *Motility phenotyping of model organism C. elegans using Scale-Invariant Feature Transform (SIFT),* Primary Supervisor: Josué Sznitman

Ayala Greenblum (2013, *Cum Laude*), *Statistical learning methods for segmentation problems in the model organism C. elegans*, Primary Supervisor: Josué Sznitman

PhD theses in progress
Shani Elias-Kirma, *Investigation of surfactant-laden liquid bolus for pulmonary delivery*, Primary Supervisor: Josué Sznitman, Starting Year: 2015, Expected Graduation: 2020.

Eliram Nof, *Flow and mass transport characteristics in neonatal lungs under high frequency oscillatory ventilation*, Primary Supervisor: Josué Sznitman, Starting Year: 2017, Expected Graduation: 2021.

Merav Belenkovich, *The behavior of deformable particle carriers in blood flow*, Primary Supervisor: Netanel Korin (Biomedical Eng.), Secondary Advisor: Josué Sznitman. Starting Year: 2018, Expected Graduation: 2022.

MSc theses in progress
Metar Heller-Algazi, *Characterizing the role of fluid shear stress on airway epithelium polarization*, Primary Supervisor: Josué Sznitman, Starting Year: 2017, Expected Graduation: 2019.

Lee Friedman, *Lung-on-chip platforms for pro-inflammatory airway assays*, Primary Supervisor: Josué Sznitman, Starting Year: 2018, Expected Graduation: 2020.

Leen Abu-Ahmad, *Transport and deposition of excipient enhanced aerosols in the lungs of an infant*. Primary Supervisor: Josué Sznitman, Starting Year: 2019, Expected Graduation: 2021.

Hikaia Zidan, *Nasal biopsy cells as a tool for inflammation assays of the tracheobronchial airways with lung-on-chips,* Primary Supervisor: Josué Sznitman (Biomedical Eng.), Secondary Advisor: Netanel Korin. Starting Year: 2019, Expected Graduation: 2021.

RESEARCH GRANTS (external funding only)

2019 Ministry of Science and Technology (MOST, Israel), Medical Devices, 600,000 ILS, PI: Josué Sznitman.
2018 ERC Proof-of-Concept (Horizon 2020, European Commission), 150,000 Euros, PI: Josué Sznitman.
2017 Israel Innovation Authority, Kamin Program, $240,000, PI: Josué Sznitman.
2017 German Israel Science (GIF) Foundation, 180,000 Euros, Co-PIs: Josué Sznitman, C-L Lehr (Helmholtz Institute, Saarbruecken, Germany).
2016 ERC Starting Grant (Horizon 2020, European Commission), 1,937,000 Euros, PI: Josué Sznitman.
2016 ERACoSysMed (ERA-NET, H2020), 1,700,000 Euros (Sznitman: 100,000 Euros), co-PIs: Jochen Hampe (Dresen Germany, Coordinator), Tom Hemming Karlsen (Norway), M. Trauner (Austria), M. Zerial (Germany), J. Sznitman (Israel), P. Delmas (France).

2013 Environmental Health Fund (EHF) Israel, 40,000 dollars, PI: Josué Sznitman.
2012 Israel Science Foundation (ISF), 1,200,000 ILS, PI: Josué Sznitman.
2012 US-Israel Binational Science Foundation (BSF), 167,000 dollars: co-PIs: Josué Sznitman (Israel), Paulo Arratia (USA), Todd Lamitina (USA).
2011 Marie Curie Career Integration Grant (CIG), FP7 European Commission, 100,000 Euros, PI: Josué Sznitman.

PUBLICATIONS

Note: PI marked in **bold**, graduate (MSc, PhD) students are underlined and postdocs in *italic*.

Theses

1. **J. Sznitman**. *Modeling of heat removal in manual transmission automobile clutches*. Thesis Mechanical Eng. MIT, B.Sc., Inst. Archives - Noncirculating Collection 3, Barker MIT Library, 2002.
2. **J. Sznitman**. *Whole-field density measurements and Abel reconstruction of axisymmetrical vortex rings*. Thesis Mechanical Eng., Dipl.-Ing., ETH Zurich, 2003.
3. **J. Sznitman**. *Respiratory flows in the pulmonary acinus and insights on the control of alveolar flows*, PhD Thesis No. 17542, Institute of Fluid Dynamics, ETH Zurich, 2008.

Refereed papers in professional journals

1. Bruehwiler PA, Buyan M, Huber R, Bogerd CP, **Sznitman J**, Graf SF, and Roesgen T. *Heat transfer variations of bicycle helmets*, Journal of Sports Science 24: 999-1011, 2006.
2. **Sznitman J**, and Roesgen T. *Whole-field density visualization and Abel reconstruction of axisymmetric vortex rings*, Journal of Flow Visualization and Image Processing 13: 343-358, 2006.
3. **Sznitman J**, and Roesgen T. Optical density visualization and Abel reconstruction of vortex rings using background-oriented Schlieren, Journal of Visualization 10: 5, 2007.
4. **Sznitman J**, Heimsch F, Heimsch T, Rusch D, and Roesgen T. *Three-dimensional convective alveolar flow induced by rhythmic breathing motion of the pulmonary acinus*, Journal of Biomechanical Engineering 129: 658-665, 2007.
5. Wildhaber JH, **Sznitman J (equal contribution)**, Harpes P, Straub D, Moeller A, Basek P, and Sennhauser FH. *Correlation of spirometry and symptom scores in childhood asthma and the usefulness of curvature assessment in expiratory flow-volume curves*, Respiratory Care 52: 1744-1752, 2007.
6. **Sznitman J**, and Roesgen T. *Low-Reynolds boundary driven cavity flows in a thin liquid shell*, PAMM 7: 4100007-4100008, 2007.
7. **Sznitman J**, and Roesgen T. Formation of negative buoyant vortex rings at an orifice opening, International Journal of Transport Phenomena 10: 37-45, 2008.
8. **Sznitman J**, and Roesgen T. *Acoustic streaming flows in a cavity: an illustration of small-scale inviscid flow*, Physica D 237: 2240-2246, 2008.
9. **Sznitman J**, and Roesgen T. Acoustic streaming visualization in elastic spherical cavities, Journal of Visualization 11: 347-355, 2008.
10. **Sznitman J**, Heimsch T, Wildhaber JH, Tsuda A, and Roesgen T. *Respiratory flow phenomena and gravitational deposition in a three-dimensional space-filling model of the pulmonary acinar tree*, Journal of Biomechanical Engineering 131: 031010, 2009.
11. **Sznitman J**. *Convective gas transport in the pulmonary acinus: comparing roles of convective and diffusive lengths*, Journal of Biomechanics 42: 789-792, 2009.

12. **Sznitman J**, and Roesgen T. *PIV investigation of low-Reynolds boundary driven cavity flows in thin liquid shells*, Journal of Visualization 13: 49-60, 2010.
13. **Sznitman J**, Purohit PK, Krajacic P, Lamitina T, and Arratia PE. *Material properties of Caenorhabditis elegans swimming at low Reynolds number*, Biophysical Journal 98: 617-626, 2010.
14. **Sznitman J**, Sutter R, Altorfer D, Stampanoni M, Roesgen T, and Schittny JC. *Visualization of respiratory ows in reconstructed 3D terminal alveolar airspaces using X-ray tomographic microscopy*, Journal of Visualization 13: 337-345, 2010.
15. **Sznitman J**, Shen X, Purohit PK, and Arratia PE. *The effects of fluid viscosity on the kinematics and material properties of C. elegans swimming at low Reynolds number*, Experimental Mechanics 50: 1303-1311, 2010.
16. Juarez G, Lu K, **Sznitman J**, and Arratia PE. Motility of small nematodes in wet granular media, Europhysics Letters 92: 44002, 2010.
17. **Sznitman J**, Shen X, Sznitman R, and Arratia PE. Flow behavior and force measurements of undulatory swimmers at low Reynolds number, Physics of Fluids 22: 121901, 2010.
18. **Sznitman R**, Gupta M, Hager GD, Arratia PE, and Sznitman J. *Multi environment model estimation for motility analysis of Caenorhabditis Elegans*, PLOS One 5(7): e11631, 2010.
19. Shen X, **Sznitman J**, Krajacic P, Lamitina P, and Arratia PE. *Undulatory locomotion of C. elegans on wet surfaces*, Biophysical Journal 102: 2772-2781, 2012.
20. **Sznitman J**, Guglielmini L, Clifton D, Scobee D, Stone HA, and Smits AJ. *Experimental characterization of 3D corners flows at low Reynolds numbers*, Journal of Fluid Mechanics 707: 35-52, 2012.
21. Spycher B, Wildhaber JH, Frey U, and **Sznitman J**. *Mathematical behavior of MEFV curves in childhood asthma and the role of curvature in quantifying flow obstruction*, ISRN Pulmonology ID 305176, 2012.
22. Ghosh R, and **Sznitman J**. *Visualization of nematode C. elegans swimming in a drop*, Journal of Visualization 15: 277-279, 2012.
23. **Sznitman J**, Stone HA, Smits AJ, and Grotberg JB. *Teaching the falling ball problem with dimensional analysis*, European Journal of Physics Education 4(2): 32-42, 2013.
24. Berman R, Oded K, **Sznitman J**, and Leshansky A. *Undulatory locomotion of finite filaments*, New Journal of Physics 15: 075022, 2013.
25. Fishler R, *Mulligan MK*, and **Sznitman J**. *Mapping low-Reynolds-number microcavity flows using microfluidic screening devices*, Microfluidics and Nanofluidics 15: 491-500, 2013.
26. Fishler R, *Mulligan MK*, and **Sznitman J**. *Acinus-on-a-chip: a microfluidic platform for respiratory acinar flows*, Journal of Biomechanics 46: 2817-2823, 2013.
27. Greenblum A, Sznitman R, Fua P, Arratia PE, Oren M, Podbilewicz B, and **Sznitman J**. *Dendritic tree extraction from noisy Maximum Intensity Projection images in C. elegans*, BMC Biomedical Engineering Online 13(1): 74, 2014.
28. Hofemeier P, and **Sznitman J**. *Role of alveolar topology on acinar flows and convective mixing*, Journal of Biomechanical Engineering: 136(6): 061007, 2014.
29. *Mahto SK*, Tenenbaum-Katan J, Greenblum A, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic shear stress-regulated surfactant secretion in alveolar epithelial type II cells in vitro*, American Journal of Physiology Lung Cell Mol. Physiol. 306(7): L672-L683, 2014.
30. Hofemeier P, Fishler R, and **Sznitman J**. *The role of respiratory flow asynchrony on convective mixing in the pulmonary acinus*, Fluid Dynamics Research 46: 041407, 2014.
31. Greenblum A, Sznitman R, Fua P, Arratia PE, and **Sznitman J**. *Caenorhabditis elegans segmentation using texture-based models for motility phenotyping*, IEEE Transactions in Biomedical Engineering 61(6): 2278 – 2289, 2014.
32. Tenenbaum-Katan J, Fishler R, Rothen-Rutishauser, and **Sznitman J**. *Biomimetics of fetal alveolar flow phenomena using microfluidics.* Biomicrofluidics 9: 014120, 2015.

33. Koren L, Sznitman R, Carls C, Krajacic P, Arratia PE, Brown AEX, and **Sznitman J**. *Model-independent phenotyping of C. elegans locomotion using Scale-Invariant Feature Transform*, PLoS One 10: e0122326, 2015.
34. Marom A, Mahto SK, Shor E, Tenenbaum-Katan J, **Sznitman J**, and Shoham S. *Microfluidics chip for site-specific neuropharmacological treatment and activity probing of 3D neuronal 'Optonet' Cultures.* Advanced Materials Healthcare 4(10): 1478-1483, 2015.
35. Hofemeier P and **Sznitman J**. *Revisiting pulmonary acinar particle transport: convection, sedimentation, diffusion and their interplay*, Journal of Applied Physiology, 118: 1375-1385 2015.
36. Fishler R, Hofemeier P, Etzion Y, Dubowski, and **Sznitman J**. *Particle dynamics and deposition in true-scale pulmonary acinar models*, Scientific Reports 12071: 1-13, 2015.
37. Stauber H, Fishler R, Hofemeier P, Waisman D, and **Sznitman J**. *Particle Dispersion in Morphologically-Inspired Computational Models of Alveolar Capillary Networks*, International Journal of Experimental and Computational Biomechanics 3(4): 300-318, 2015.
38. Fishler R and **Sznitman J**. *A Microfluidic Model of Biomimetically-Breathing Pulmonary Acinar Airways*, Journal of Visualized Experiments 111: e53588, 2016.
39. Tenenbaum-Katan J, Hofemeier P, and **Sznitman J**. *Computational models of inhalation therapy in early childhood: therapeutic aerosols in the developing acinus.* Journal of Aerosol Medicine and Pulmonary Drug Delivery, 29: 288-298, 2016.
40. Ostrovski Y, Hofemeier P, and **Sznitman J**. *Augmenting Regional and Targeted Delivery in the Pulmonary Acinus using Magnetic Particles.* International Journal of Nanomedicine 11: 1-11, 2016.
41. Oakes JM[*], Hofemeier P[*], Vigon-Clementel IE, and **Sznitman J**. *Aerosols in healthy and emphysematous in silico pulmonary acinar rat models*, Journal of Biomechanics 49: 2213-2220, 2016. ([*]Equal contribution)
42. Hofemeier P, Shachar-Berman L, Tenenbaum-Katan J, Filoche M, and **Sznitman J**. *Unsteady diffusional screening in 3D pulmonary acinar structures: from infancy to adulthood*, Journal of Biomechanics 49: 2193-2200, 2016.
43. **Sznitman J** and Steinman DA. *Relevance and challenges of computational fluid dynamics in the biomedical sciences*. Journal of Biomechanics 49: 2101, 2016.
44. Stylaniou FS, **Sznitman J** and Kassinos SC. *Direct numerical simulation of particle laden flow in a human airway bifurcation,* International Journal of Heat and Mass Transfer 61: 677-710, 2016.
45. Hofemeier P and **Sznitman J**. *The role of anisotropic expansion for pulmonary acinar aerosol deposition,* Journal of Biomechanics 49: 3543-3548, 2016.
46. *Fishler R*, Ostrovski Y, Lu C-Y, and **Sznitman J**. *Streamline crossing: an essential mechanism for aerosol dispersion in the pulmonary acinus*, Journal of Biomechanics 50: 222-227, 2017.
47. Stauber H, Waisman D, Korin N and **Sznitman J**. *Red blood cell dynamics in microfluidic networks of pulmonary alveolar capillaries*, Biomicrofluidics 11: 014103, 2017.
48. *Fishler R* and **Sznitman J**. *A novel aerodynamic sizing method for pharmaceutical aerosols using image-based analysis of settling velocities.* Inhalation 11: 21-25, 2017.
49. Stauber H, Waisman D, Korin N and **Sznitman J**. *Red blood cell (RBC) suspensions in confined microflows: pressure-flow relationship*, Medical Engineering and Physics 48: 49-54, 2017.
50. *Fishler R*, Verhoeven F, de Kruijf W and **Sznitman J**. *Particle sizing of pharmaceutical aerosols via direct imaging of particle settling velocities*. European Journal of Pharmaceutical Sciences 113: 113-158, 2018.
51. Koullapis PG, Hofemeier P, **Sznitman J** and Kassinos SC. *An efficient computational fluid-particle dynamics method to predict deposition in a simplified approximation of the deep lung*. European Journal of Pharmaceutical Sciences 113: 132-144, 2018.

52. Shachar-Berman L, Ostrovski Y, Kassinos SC and **Sznitman J**. *Transport of ellipsoid fibers in oscillatory shear flows: implications for aerosol deposition in deep airways*. European Journal of Pharmaceutical Sciences 113: 145-151, 2018.
53. Hofemeier P, Koshiyama K, Wada S and **Sznitman J**. *One (sub-)acinus for all: Fate of inhaled aerosols in heterogeneous pulmonary acinar structures*. European Journal of Pharmaceutical Sciences 113: 53-63, 2018.
54. Korin N and **Sznitman J**. *Preface to special topic: bio-transport processes and drug delivery in physiological micro-devices*. Biomicrofluidics 12: 042101, 2018.
55. *Das P*, Nof E, Amirav I, Kassinos SC, and **Sznitman J**. *Targeting inhaled aerosol delivery to upper airways in children: insight from computational fluid dynamics.* PLoS One 13: e0207711, 2018.
56. Bauer K, Nof E and **Sznitman J**. *Revisiting high-frequency oscillatory ventilation in vitro and in silico in neonatal conductive airways*. Clinical Biomechanics, 66: 50-59, 2019.
57. **Sznitman J**. *Preface: Clinical relevance of respiratory mechanics and flows*. Clinical Biomechanics, 66:1, 2019.
58. Ostrovski Y, Dorfman S, Mezhericher M, Kassinos SC, and **Sznitman J**. *Targeted drug delivery to upper airways using a pulsed aerosol bolus and inhaled volume tracking method*. Flow, Turbulence and Combustion, 102: 73-87, 2019.
59. Shachar-Berman L, *Ostrovski Y* , Koshiyama K, Wada S, Kassinos S and **Sznitman J.** *Targeting inhaled fibers to the pulmonary acinus: Opportunities for augmented delivery from in silico simulations,* European Journal of Pharmaceutical Sciences 137: 105003, 2019.
60. *Artzy-Schnirman A*, Zidan H, Elias-Kirma S, Ben-Porat L, Tenenbaum-Katan J, Carius P, Fishler R, Schneider-Daum N, Lehr CM and **Sznitman J.** *Capturing the onset of Bacterial Pulmonary Infection in Acini-on-Chips*, Advanced Biosystems 3: 1900026, 2019.
61. Poh W, Rahman ABN, Ostrovski Y, **Sznitman J**, Perthe K, Loo J. *Active Pulmonary Targeting against Tuberculosis (TB) via Triple–Encapsulation of Q203, Bedaquiline and Superparamagnetic Iron Oxides (SPIOs) in Nanoparticle Aggregates*. Drug Delivery 26: 1039-1048, 2019.
62. Nof E, M Heller-Algazi, F Coletti, D Waisman, and **Sznitman J**. Ventilation-induced jet suggests biotrauma in reconstructed airways of the intubated neonate. *Journal of the Royal Society Interface*, in press, 2019.

Review papers

63. *Mahto SK*, Tenenbaum-Katan J, and **Sznitman J**. *Respiratory physiology on a chip*, Scientifica ID 364054 (12 pages), 2012.
64. **Sznitman J**. *Respiratory microflows in the pulmonary acinus*, Journal of Biomechanics 46: 284-298, 2013.
65. *Mahto SK*, Charwat V, Ertl B, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic platforms for advanced risk and cellular assessments of nanomaterials*, Nanotoxicology, 9: 381-385, 2015.
66. Tenenbaum-Katan J, *Artzy-Schnirman A*, *Fishler R*, Korin N and **Sznitman J**. *Biomimetics of the pulmonary environment in vitro: a microfluidics perspective*. Biomicrofluidics 12: 042208, 2018.
67. *Artzy-Schnirman A*, Hobi N, Schneider-Daum N, Guenat OT, Lehr CM, and **Sznitman J**. *Advanced in vitro lung-on-chip platforms for inhalation assays: from prospect to pipeline*. *European Journal of Pharmaceutics and Biopharmaceutics* 144: 11-17, 2019.
68. Inthavong K, *Das P*, Singh N and **Sznitman J**. *In silico approaches to respiratory nasal flows: a review*. Journal of Biomechanics 97: 109434, 2019.
69. Koullapis P, Ollson B, Kassinos SC and **Sznitman J**. *Multiscale in silico lung modeling strategies for aerosol inhalation therapy and Drug Delivery*. Current Opinion in Biomedical Engineering, 11: 130-136, 2019.

Books and /or chapters in books

1. **Sznitman J**, Schmuki S, Sutter R, Tsuda A, and Roesgen T. CFD investigation of respiratory flows in a space-filling pumonary acinus model}, Brebbia CA ed., in: Modeling in Medicine and Biology VII, WIT Transactions on Biomedicine and Health, Vol. 12, pp. 147-156, 2007.
2. **Sznitman J**, and Gehr P. *Physical and physiological principles*, Wildhaber JH and Kamin W (ed.), in: Inhalation therapy in children and adolescents (German), pp. 11-25, Uni-Med Science Verlag AG, 2008.
3. **Sznitman J**. *Respiratory flows in the pulmonary acinus*, Suedwestdeutscher Verlag fuer Hochschulschriften AG, ISBN 978-3838106847, 2009.
4. **Sznitman J** and Arratia PE, *Locomotion through Complex Fluids: an Experimental View*, S.E. Spagnolie (ed.), Complex Fluids in Biological Systems, Biological and Medical Physics, Biomedical Engineering, Springer Science+Business Media New York 2015.

Refereed papers in conference proceedings

1. Bruewihler PA, Buyan M, Huber R, **Sznitman J**, Graf SF, and Roesgen T. *Heat transfer variations of bicycle helmets*. Proceedings of the 11th International Conference on Environmental Ergonomics, 22-26 May 2005, Ystaad Sweden, p. 293-296.
2. **Sznitman J**, Kritter F, Roesgen T, and Bruewihler PA. *Flow visualization of bicycle helmets for optimal ventilation design*, HT2005-72751. Proceedings of the ASME Summer Heat Transfer Conference, 17-22 July 2005, San Francisco CA USA.
3. **Sznitman J**, Straub D, Moeller A, Basek P, Sennhauser FH, and Wildhaber JH. *Childhood asthma assessment from quantitative determination of curvature of flow-volume curves*. Proceedings of the American Thoracic Society (PATS), Volume 3, Abstracts Issue, 2006.
4. Bruewihler PA, Buyan M, Huber R, Bogerd CP, **Sznitman J**, Graf SF, and Roesgen T. *Heat transfer variations of bicycle helmets: What works best?* Proceedings of the 11th Annual Congress of the European College of Sport Science, 5-8 July 2006, Lausanne, Switzerland.
5. **Sznitman J**, Spycher B, Frey U, and Wildhaber JH. Direct maximum expiratory flow modeling from lung function testing of pediatric patients. In: Proceedings of the 5th World Congress of Biomechanics, 29 July-4 August 2006, Munich, Germany, edited by D. Liepsch: Medimond Inter. Proc., pp. 319-324, 2006.
6. **Sznitman J**, Heimsch F, Altorfer D, Schittny JC, and Roesgen T. *Alveolar flow simulations during rhythmical breathing motion in reconstructed XTM acinar airspaces*. In: Proceedings of the 5th World Congress of Biomechanics, 29 July-4 August 2006, Munich, Germany, edited by D. Liepsch: Medimond Inter. Proc., pp. 601-605, 2006.
7. Altorfer D, **Sznitman J**, Schittny JC, and Roesgen T. *3D reconstruction and visualization of alveolar airspaces from X-ray tomographic microscopy (XTM) imaging*. In: Biomedizinische Technik, Biomedical Engineering, Gemeinsame Jahrestagung der Deutschen, Osterreichischen und Schweizerischen Gesellschaften fuer Biomedizinische Technik, de Gruyter Berlin New York, 2006.
8. Heimsch F, **Sznitman J**, Altorfer D, Schittny JC, and Roesgen T. *Respiratory flow simulations in reconstructed 3D alveolar airspaces*. In: Biomedizinische Technik, Biomedical Engineering, Gemeinsame Jahrestagung der Deutschen, Osterreichischen und Schweizerischen Gesellschaften fuer Biomedizinische Technik, de Gruyter Berlin New York, 2006.
9. **Sznitman J**, and Roesgen T. *Formation of negative buoyant vortex rings at an orifice opening*. Proceedings of the 17th International Symposium on Transport Phenomena, 4-8 September 2006, Toyama, Japan.
10. **Sznitman J**, and Roesgen T. *Visualization and reconstruction of negative buoyant vortex rings*. Proceedings of the 12th International Symposium on Flow Visualization, 10-14 September 2006, Goettingen, Germany.

11. **Sznitman J**, and Roesgen T. *PIV investigation of internal recirculating flows in thin liquid shells*. Proceedings of the 12th International Symposium on Flow Visualization, 10-14 September 2006, Goettingen, Germany.
12. **Sznitman J**, Ho TH, and Roesgen T. *PIV investigation of internal acoustic streaming inside elastic cavities*. Proceedings of the 7th International Symposium on Particle Image Velocimetry, 11-14 September 2007, Rome, Italy.
13. **Sznitman J**, Heimsch T, Wildhaber JH, Tsuda A and Roesgen T. *Flow phenomena and gravitational sedimentation in models of the pulmonary acinus*. Proc. Interdisciplinary of International Transport Phenomena 2007, 4-8 September, Toyama, Japan.
14. **Sznitman J**, and Roesgen T. *Low Reynolds streaming in a cavity: an illustration of inviscid flow*. XXII International Congress on Theoretical and Applied Mechanics, 25-29 August 2008, Adelaide, Australia.
15. **Sznitman J**. *Convective gas transport in the acinus: revisiting the role of effective diffusivity*. in CT Lim and JCH Goh (Eds.): IFMBE Proceedings 31, pp. 370-373, 2010.
16. **Sznitman J**, Shen X, Purohit PK, Sznitman R, and Arratia PE. *Swimming behavior of the nematode Caenorhabditis elegans: bridging small-scale locomotion with biomechanics*. in CT Lim and JCH Goh (Eds.): IFMBE Proceedings 31, pp. 29-32, 2010.
17. Mahto SK, Marom A, **Sznitman J**, and Shoham S. *Hydrogel-based microfluidic chip for site-specific chemical treatment of 3D neuronal "Opto-Nets"*. Proceedings of the 6th International IEEE EMBS Conference on Neural Engineering, 2013.
18. Tenenbaum-Katan J, Fishler R, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic in vitro platforms of pulmonary alveolar physiology*. in IFMBE Proceedings 6th European Conference of the International Federation for Medical and Biological Engineering, Volume 45, 2015, pp 777-780, 2015.
19. *Fishler R* and **Sznitman J**. *Acini-on-Chip: Novel in vitro assessment of particle dynamics and deposition in the deep lungs*. RDD Europe 2017. Volume 1: 119-128, 2017.
20. *Fishler R* and **Sznitman J**. *Computer vision-based aerodynamic particle sizing: A rapid method for real-time characterization of inhaled aerosols*. RDD Europe 2017. Volume 2: 305-308, 2017.

Patents

1. Blanco EE, Manue WH, Tarud S, Goldwitz JA, **Sznitman J**, and Ignatius MB. *Advanced Elastomeric Integral Suspension Seating System*. United States Patent No. 6,663,177, 16 Dec. 2003.
2. Fishler R and **Sznitman J**. *A microfluidic platform and methods for using the same*. United States Patent No. 20,150,033,872. 5 February 2015.
3. Fishler R and **Sznitman J**. *Device, system and method for measuring particle size*. PCT/IL2016/050979. 5 September 2016.
4. Ostrovski Y and **Sznitman J**. *Targeted delivery of aerosols of magnetized active agents*. PCT/IL2017/050472. 25 April 2017.
5. Ostrovski Y and **Sznitman J**. *Foam for pulmonary drug delivery*, PCT/IL2017/051208. 6 November 2017.

Research reports and other publications (only publications not mentioned above)

1. **Sznitman J**. *Respiratory Flows and Inhalation Therapy*. Lecture Notes, Technion, 2011-2016.
2. Jung S, Staples AE, Dabiri JO, Marsden AL, Prakash M, Davis KA, Shadden SC, Savin T, Bourouiba L, **Sznitman J** and Ravi-Chandar K. *Research Trends in Biological Fluid Dynamics*, National Academies USNC/TAM Report on Recent Trends in Mechanics, 2016.

CONFERENCES

Plenary, keynote or invited talks

1. *Convective Gas Transport in the Acinus: Revisiting the Role of Effective Diffusivity*, 6th World Congress of Biomechanics, August 1-7 2010, Singapore. **Invited talk**
2. *Microfluidic designs of pulmonary acinar networks: CFD and experiment*, 7th International Biofluid Mechanics Symposium, March 25-30 2012, Israel. **Invited talk**
3. *Respiratory physiology using lab-on-chip devices*, Annual Meeting of the Israeli Society of Medical and Biological Engineering, February 19 2013, Israel. **Invited talk**
4. *Acinus-on-a-chip: respiratory physiology using in vitro microfluidics*, 7th World Congress of Biomechanics in Boston, USA, July 6-11, 2014. **Invited talk**
5. *Microfluidic In vitro Platforms of pulmonary alveolar physiology*, 6th European Conference of the International Federation for Medical and Biological Engineering in Croatia, September 2014. **Invited talk**
6. *Mysteries of respiratory flows in deep pulmonary airways*, NSF-Sponsored Meeting on Fluid Dynamics in Living Systems, Arlington VA USA, September 15-16, 2014. **Invited talk**
7. *Pulmonary targeting of fine and ultrafine particles in the deep alveolated lungs*, 20th International Congress on Aerosols in Medicine and Pulmonary Drug Delivery, Munich Germany, May 30-June 3, 2015. **Invited talk**
8. *Unraveling the mysteries of respiratory airflows in the acinar airways depths*, 21st Congress of the European Society of Biomechanics, Prague, Czech Republic, July 2015. **Perspective talk**
9. *Unraveling the mysteries of respiratory airflows in the acinar airways depths*. 8th International Biofluids Symposium, Pasadena CA, USA, February 2016. **Invited talk**
10. *Unraveling the fate of inhaled aerosols in the pulmonary depths in silico and in vitro.* Workshop on Pulmonary Drug Delivery (COST Action 1404 "SimInhale"). Prague, Czech Republic, October 2016. **Invited talk**
11. *Paradigms of targeted aerosol delivery in the deep lungs: lessons from in vitro and in silico studies*. Workshop on Inhaled Therapeutics for Treating Lung & Neurodegenerative Diseases. Melbourne, Australia, November 2016. **Invited talk**
12. *Microflows in pulmonary airways with in vitro microfluidics*. The Batsheva de Rotschild Seminar: Physics of Microfluidics. Sde Boker, Israel, January 2017. **Invited talk**
13. *Acini-on-Chip: Novel in vitro assessments of particle dynamics and deposition in the deep lungs*. Respiratory Drug Delivery Europe 2017. Nice, France, April 2017. **Podium Presentation**
14. *Systemic drug delivery via the lungs: Can we do better?* International Drug Discovery Science & Technology. Osaka, Japan, July 2017. **Invited Talk**
15. *Modeling of the deep lung: one acinus for all*. SimInhale COST Action MP1404 Training School. Athens, Greece, October 2017. **Invited Talk**
16. *Point targeting in the lungs using inhaled magnetic aerosols.* 3rd Annual Inhalation & Respiratory Drug Delivery Congress, London UK, May 2018, **Invited Talk**
17. *Biomimetic lung-on-chips for physiological screening assays.* Biobarriers 2018, Saarbruecken Germany, August 2018. **Invited Speaker**
18. *Bioengineering strategies for targeted drug delivery in the lungs.* Drug Delivery to the Lungs 2018, Edinburgh, UK, December 2018. **Award Keynote**
19. *Biomimetic in vitro airway platforms for drug delivery assays and precision medicine*. Keystone Symposia on Delivering Therapeutics across Biological Barriers, Dublin, Ireland, May 2019. **Invited Speaker**
20. *Bioengineered strategies for targeted therapeutic delivery to the lungs*, 25th Congress of the European Society of Biomechanics, Vienna, Austria, July 2019. **Perspective talk**

21. *Advanced in vitro airway platforms for inhalation screening assays*. International Conference on Current Challenges & Future Opportunities for Inhalation Therapies, Athens, Greece, Sept 2019. **Invited Speaker.**
22. *Advanced microfluidic platforms for respiratory research: bridging in vivo and in vitro interfaces*. 12th World Meeting on Pharmaceutics, Biopharmaceutics, and Pharmaceutical Technology, Vienna, Austria, March 2020. **Invited Speaker**

Participation in organizing conferences

1. 64th Annual Meeting of the Division of Fluid Dynamics (DFD), American Physical Society, Baltimore MD, USA, November 2011, **Session Chair** (Swimming Dynamics).
2. 7th World Congress of Biomechanics, Boston MA, USA, July 2014, **Session Chair** (Multiscale Mechanobiology in Respiratory System).
3. 6th European Conference of the International Federation of Medical & Biological Engineering MBEC 2014, Dubrovnik Croatia, September 2014, **Session Chair** (Organ-on-Chips).
4. 67th Annual Meeting of the Division of Fluid Dynamics (DFD), American Physical Society, November 2014, San Francisco CA, USA, **Session Chair** (Respiratory Biofluids).
5. 2nd international conference on CFD in Medicine & Biology, August 2015, Algarve Portugal, **Conference Chair.**
6. 8th International Biofluids Symposium, February 2016, Pasadena CA, USA, **International Scientific Committee**.
7. 14th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, September 2016, Tel Aviv Israel, **Session Chair** (Respiratory mechanics and flows).
8. European Aerosol Conference 2017, September 2017, Zurich Switzerland, **Session Chair** (Targeted generation and delivery of aerosolized medicines).
9. Nanotechnology in Medicine: Bridging Translational *in vitro* and *in vivo* Interfaces, June 2018, Albufeira Portugal, **Conference Chair**
10. World Congress of Biomechanics 2018, July 2018, Dublin Ireland, **Session Chair** (Biolocomotion).
11. 9th International Biofluids Symposium, February 2020, Tucson AZ, USA, **International Scientific Committee and Session Chair**
12. Nanotechnology in Medicine: Enabling Next Generation Therapies, June 2020, Calabria, Italy, **Conference Co-Chair**