

## CURRICULUM VITÆ

## Address:

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Member of the Ilse Katz Institute for Nanoscale Science & Technology, and the Reimund Stadler Minerva Center for Mesoscale Macromolecular Engineering.

**Employment**

*Oct. 2009 - Present:* Associate Professor, Dept. Chemical Engineering (Ben Gurion Univ., Israel)  
*Apr. 2005 - Oct. 2009:* Senior Lecturer, Dept. Chemical Engineering (Ben Gurion Univ., Israel)  
*Sep. 2004 - Mar. 2005:* Post-doc with Profs. J.-F. Joanny/J. Prost (Institut Curie, Paris)  
*Sep. 2003 - Sep. 2004:* Post-doc with Prof. P.-G. de Gennes (Collège de France, Paris)  
*Oct. 2001 - Sep. 2003:* Post-doc with Prof. Ludwik Leibler (ESPCI, Paris),  
Chateaubriand fellowship program.

**Education**

*1998-2001:* Graduate studies in Condensed Matter Physics: Ph.D. student.  
Tel Aviv University, Israel.  
2001: Ph.D. in Physics, with distinction.  
Thesis Subject: *Ordered Morphologies of Diblock Copolymers in Bulk and Thin-Film Systems.*  
Supervisor: Prof. D. Andelman.  
*1996-1997:* Graduate studies in Condensed Matter Physics: M.Sc. student.  
Hebrew University, Jerusalem, Israel.  
1997: M.Sc. in Physics, Magna cum Laude.  
Thesis Subject: *On the Theory of a Two-Dimensional Ballast Resistor.*  
Supervisor: Prof. B. Meerson.  
*1992-1995:* Undergraduate studies in Combined Mathematics – Physics Program.  
Hebrew University, Jerusalem, Israel.  
1995: B.Sc. in Combined Mathematics – Physics Program.

## Awards and Appointments

- Chair Michelin, Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI) (2008).
- The Joseph and May Winston Foundation Career Development Chair in Chemical Engineering (2008).
- The Wolf Foundation Krill Prize for Excellence in Scientific Research (2007).
- Toronto prize for excellency in scientific research (2006).
- Joliot Curie visiting professor, ESPCI (2005).
- Chateaubriand fellowship (2001).
- Excellency award of the Union of Iranian Immigrants in Israel (1995).
- Excellency award of the Karples Family (HUJI, 1995, 1996).

## Edited Books

- “Polymers, liquids and colloids in electric fields: Interfacial instabilities, orientation, and phase-transitions”  
Eds. Y. Tsori and U. Steiner, World Scientific (2008).

## Book Chapters

- Y. Tsori  
*External-Field Induced Pattern Formation in Some Polymer Systems,*  
*In Nonlinear Dynamics in Polymeric Systems,*  
*ACS Symposium Series No. 869; Pojman, J. A.; Tran-Cong-Miyata, Q. Eds.; Oxford University Press: Oxford, 2003; pp 264.*

## Grants

- Y. Tsori  
*Phase Transitions and Chemical and Biological Reactions in Electric Field Gradients,*  
European Research Council (ERC) “Starting Grant” no. 259205, 2010-2015.
- Y. Tsori  
*Phase transitions in liquid mixtures in electric fields gradients,*  
Israel Science Foundation (ISF) grant no. 11/10, 2010-2014.
- Y. Tsori and M. Müller  
*Kinetics of directed assembly in diblock copolymer thin films under the influence of electric fields,*  
Deutsche Forschungsgemeinschaft (DFG) grant no. MU1674/11-1, 2010-2013.

- Y. Tsori  
*Demixing dynamics and instabilities in ion-containing liquid mixtures in nonuniform electric fields,*  
Young German- Israel Fun (GIF) grant no. 2144-1636.10/2006, 2008.
- Y. Tsori  
*Electric-Field Induced Phase Separation in Liquid Mixtures,*  
Israel Science Foundation (ISF) grant no. 284/05, 2005-2008.

### Patents

- Y. Tsori  
*Electric-Field Induced Phase Separation in Liquid Mixtures,*  
PCT/IL2007/000737.

### Invited Talks at Scientific Meetings

- *The interaction between colloids in polar mixtures,*  
Workshop on New Challenges in Electrostatics of Soft and Disordered Matter,  
Toulouse, **5/2012**.
- *Phase Transitions in Polymers and Liquids in Electric Field Gradients,*  
The 9th Stadler Minerva student workshop,  
Ein-Gedi, **3/2011**.
- *Demixing with Electric Field Gradients,*  
Electrokinetic Phenomena in Nano-Colloids and Nano-Fluidics,  
Technion, **12/2010**.
- *Phase Transitions in Nonuniform Forcing,*  
workshop on “Fluctuation-induced Forces in Condensed Matter”, Max-Planck Institute for  
the Physics of Complex Systems,  
Dresden **10/2010**.
- *Phase Separation Transition in Liquids in Electric Field Gradients,*  
Tel Aviv Symposium in Chemical Physics,  
Tel Aviv, Israel, **6/2009**.
- *Phase Separation Transition in Liquids in Electric Field Gradients,*  
Soft matter at interfaces: from self assembly to nano-confinement,  
Neve Ilan, Israel, **6/2009**.
- *Phase Separation Transition in Liquids in Electric Field Gradients,*  
EU SoftComp Network on Self-Assembly and Biomimetics,  
Weizmann Institute of Science, Rehovot, Israel, **3/2009**.
- *Phase Transitions in Polymers and Liquids in Electric Fields,*  
Meeting of the Israel Chemical Society,  
Tel-Aviv, Israel, **2/2009**.

- *Phase-Separation Transition in Liquid Mixtures Near Charged Objects*, Franco-Israeli Trends in soft matter, biophysics and microfluidics, Biarritz, France **10/2007**.
- *Discontinuous Liquid Rise in Capillaries With Varying Cross-Sections*, Israel Physics Society annual meeting, Jerusalem, Israel, **12/2006**.
- *Phase Separation in Liquid Mixtures Induced by External Fields: switchable lubrication and more*, 4th Eastern Mediterranean Chemical Engineering Conference, Dead Sea, Israel **1/2006**.
- *On the Rise and Fall of Liquid in Capillaries With Nonuniform Cross-Sections*, Symposium in honor of Prof. P.-G. de Gennes, Trieste, Italy, **5/2006**.
- *Phase-Separation in Liquid Mixtures Induced by Spatially Nonhomogeneous Forces*, Matnon 2005, International symposium on forefront of nonlinear science and its applications to materials science in the 21st century, Kyoto, Japan, **9/2005**.
- *Inducing Structural Changes in Block Copolymers: Coupling of Electric Field and Ions*, International Symposium on Soft Matter, Yonezawa, Japan, **3/2003**.
- *Control of Diblock Copolymer Morphology in Thin Film*, 224th ACS National Meeting Division of Polymer Chemistry Session on Nonlinear Dynamics in Polymeric Systems, Boston MA, USA, **8/2002**.
- *Confined Diblock Copolymers in Electric Field*, 6th International Symposium on Polymers for Advanced Technologies, Eilat, Israel, **9/2001**.
- *Surface Induced Order in Diblock Copolymers*, The Annual Meeting of the Israel Physical Society, Technion (Haifa), Israel, **7/2000**.

### Editorials and Citations

- Review in **Science Now**: “*Parting the Oils*”, by A. Cho, *Science Now*, 28 **July** (2004).
- Review in **Physics Web**: “*Liquid Separation Goes Electric*”, by I. Dumé, *Physics Web*, 28 **July** (2004).
- Media clip in **PhysOrg**: “*Electric-Field-Induced Phase-Separation of Liquid Mixtures*”, by A. Pol, *PhysOrg*, 9 **Aug** (2004).
- Review story on bacteria work in **Science & Vie**: “*La Bactérie, le Trou Noir et le Polaron*”, by F. Lassagne, *Science & Vie* (Hors séries), **September**, pg 42 (2004).
- Article “*Champ Électrique et Démixtion*”, in *Pour la Science*, n° **324** pg 18, **Octobre** (2004).

- Interview in **La Recherche**: “*Une Méthode Simple Pour Séparer des Liquides*”, by Jean-Baptiste Guion, *La Recherche*, n° **379** pg 12, **Octobre** (2004).
- Article “*La Démixtion Controlée par Champ Électrique*”, by Nadège Aumond, *l’Usine Nouvelle*, n° **2937** pg 48, 28 **Octobre** - 3 **Novembre** (2004).

### Conference Proceedings/Abstracts

- S. Samin, G. Marcus and Y. Tsori  
*Phase-separation transition in binary mixtures near charged cylindrical surfaces*,  
Proceedings of the 10th Granada Seminar, Sep 15-19, 2008.  
Modeling and Simulation of New Materials (AIP conference proceedings) **1091** (2009).
- Y. Tsori and D. Andelman  
*Control of diblock copolymer morphology in thin film*,  
Abstracts of papers of the American Chemical Society **224**, U485-U485 762-POLY Part 2,  
(2002).
- Y. Tsori and D. Andelman  
*Ordered Morphologies of Confined Diblock Copolymers*,  
Symposium Proceedings, Dynamics in Small Confining Systems, MRS Fall Meeting 2000  
(Boston).  
Mat. Res. Soc. Symp. Proc. 651, T8.1.1-T8.1.11 (2001) [cond-mat/0101022].

## List of Publications

36. S. Samin and Y. Tsori  
*The interaction between colloids in polar mixtures above  $T_c$ ,*  
*J. Chem. Phys* **136**, 154908 (2012) [arXiv:1201.3535].
35. S. Samin and Y. Tsori  
*Attraction between like-charge surfaces in polar mixtures,*  
*EPL* **95**, 36002 (2011) [arXiv:1103.0544].
34. S. Samin and Y. Tsori  
*Vapor-liquid equilibrium in electric field gradients,*  
*J. Phys. Chem. B* **115**, 75 (2011).
33. G. G. Putzel, D. Andelman, Y. Tsori and M. Schick  
*Ionic effects on the electric field needed to orient dielectric lamellae,*  
*J. Chem. Phys.* **132**, 164903 (2010) [arXiv:1004.5158].
32. V. Viasnoff, A. Meller, U. Bockelmann, H. Isambert and Y. Tsori  
*Localized Joule heating produced by ion current focusing through micron-size holes,*  
*Appl. Phys. Lett.* **96**, 163701 (2010) [arXiv:1004.4740].
31. S. Samin and Y. Tsori  
*Stability of binary mixtures in electric field gradients,*  
*J. Chem. Phys.* **131**, 194102 (2009) [arXiv:0907.4855].
30. Y. Tsori  
*Colloquium: Phase transitions in polymers and liquids in electric fields,*  
*Rev. Mod. Phys.* **81**, 1471 (2009) [arXiv:0912.1736].
29. G. Marcus and Y. Tsori  
*Phase separation transition in liquids and polymers induced by electric field gradients,*  
*J. Phys. Soc. Jap.* **78**, 041010 (2009) [arXiv:0901.1990].
28. G. Marcus, S. Samin and Y. Tsori  
*Phase-separation transition in liquid mixtures near charged objects,*  
*J. Chem. Phys.* **129**, 061101 (2008) [arXiv:0712.2901].
27. Y. Tsori, D. Andelman and J.-F. Joanny  
*Interfacial instability of charged end-group polymer brushes,*  
*Europhys. Lett.* **82**, 46001 (2008) [arXiv:0801.3318].
26. Y. Tsori and L. Leibler  
*Phase-separation of miscible liquids in a centrifuge,*  
*C. R. Physique* **8**, 955 (2007) [arXiv:0707.2266].
25. Y. Tsori  
*Discontinuous meniscus location in tapered capillaries driven by pressure difference and dielectrophoretic forces,*  
*Langmuir* **23**, 8028 (2007) [cond-mat/0702099].

24. Y. Tsori and L. Leibler  
*Phase-separation in ion-containing mixtures in electric fields*,  
*Proc. Natl. Acad. Sci. USA* **104**, 7348 (2007) [cond-mat/0610475].
23. Y. Tsori  
*Lamellar phase in nonuniform electric fields: Breaking the in-plane rotation symmetry and the role of dielectric constant mismatch*,  
*Macromolecules* **40**, 1698 (2007) [cond-mat/0609319].
22. Y. Tsori  
*Discontinuous liquid rise in capillaries with varying cross-sections*,  
*Langmuir* **22**, 8860 (2006) [cond-mat/0604231].
21. Y. Tsori, C.-Y. Li, D. Andelman and M. Schick  
*Block-copolymers in electric fields – a comparison of single-mode and self-consistent field approximations*,  
*Macromolecules* **39**, 289 (2006) [cond-mat/0508179].
20. Y. Tsori and D. Andelman  
*Coarse graining in block copolymer films*,  
*J. Pol. Sci.: Pol. Phys. B* **44**, 2725 (2006) [cond-mat/0603096].
19. Y. Tsori, E. Sivaniah, D. Andelman and T. Hashimoto  
*Orientalional transitions in symmetric diblock copolymers on rough surfaces*,  
*Macromolecules* (note) **38**, 7193 (2005) [cond-mat/0504410].
18. Y. Tsori and L. Leibler  
*Electrostatic cancellation of gravity effects in liquid mixtures*,  
*Phys. Rev. E* (Brief Reports) **71**, 032101 (2005) [cond-mat/0501744].
17. Y. Tsori and P.-G. de Gennes  
*Damping of acoustic waves in dilute polymer solutions*,  
*Macromolecules* (Communication to the Editor) **37**, 8195 (2004) [cond-mat/0407698].
16. Y. Tsori, F. Tournilhac and L. Leibler  
*Demixing in simple fluids induced by electric field gradients*,  
*Nature* **430**, 544 (2004).
15. Y. Tsori and P.-G. de Gennes  
*Frustrated rotations in nematic monolayers*,  
*Eur. Phys. J. E* **14**, 91 (2004) [cond-mat/0404259].
14. Y. Tsori and P.-G. de Gennes  
*Self Trapping of a single bacterium in its own chemoattractant*,  
*Europhys. Lett.* **66**, 599 (2004) [q-bio.PE/0405005].
13. Y. Tsori  
*Controlled pattern formation in some block copolymer systems*,  
*ACS symposium series* **869**, 264-275 (2004).

12. Y. Tsori and D. Andelman  
*Parallel and perpendicular lamellae on corrugated surfaces,*  
*Macromolecules* **36**, 8560 (2003) [cond-mat/0304334].
11. Y. Tsori, F. Tournilhac and L. Leibler  
*Orienting ion-containing block copolymers using ac electric fields,*  
*Macromolecules* **36**, 5873 (2003) [cond-mat/0301116].
10. Y. Tsori, F. Tournilhac, D. Andelman and L. Leibler  
*Structural changes in block copolymers: coupling of electric field and mobile ions,*  
*Phys. Rev. Lett.* **90**, 145504 (2003) [cond-mat/0208129].
9. Y. Tsori and D. Andelman  
*Ordering mechanisms in confined diblock copolymers,*  
*J. Interf. Sci.* **11**, 259 (2003) [cond-mat/0208127].
8. Y. Tsori and D. Andelman  
*Control of diblock copolymer morphology in thin film,*  
*Abstracts Of Papers Of The American Chemical Society* **24**, U485 (2002).
7. Y. Tsori and D. Andelman  
*Thin films of diblock copolymer in electric field:*  
*transition from perpendicular to parallel oriented lamellae,*  
*Macromolecules* **35**, 5161 (2002) [cond-mat/0110282].
6. Y. Tsori and D. Andelman  
*Diblock copolymers thin films: parallel and perpendicular*  
*lamellar phases in the weak segregation,*  
*Eur. Phys. J. E.* **5**, 605 (2001) [cond-mat/0105213].
5. Y. Tsori and D. Andelman  
*Surface induced ordering in thin film diblock copolymers: tilted lamellar phases,*  
*J. Chem. Phys.* **115**, 1970 (2001) [cond-mat/0103250].
4. Y. Tsori and D. Andelman  
*Diblock copolymer ordering induced by patterned surfaces above the order-disorder*  
*transition,*  
*Macromolecules* **34**, 2719 (2001) [cond-mat/0007055].
3. Y. Tsori and D. Andelman  
*Diblock copolymer ordering induced by patterned surfaces,*  
*Europhys. Lett.* **53**, 722 (2001) [cond-mat/0007056].
2. Y. Tsori, D. Andelman and M. Schick  
*Defects in lamellar diblock copolymers: chevron- and omega-shaped tilt boundaries,*  
*Phys. Rev. E.* **61**, 2848 (2000) [cond-mat/9905378].

1. B. Meerson and Y. Tsori

*Annular Ballast resistor: symmetry breaking, pinning and coarsening in a globally constrained reaction-diffusion system,*  
*Phys. Rev. E.* **57**, 159 (1998).