Research Team name: Electric field gradient in liquids and polymers

Presenter name: Prof. Yoav Tsori

Team Presentation – Annual Workshop, COST Action MP1106

Dublin, September, 2012

Team's general info

Research Team Name: Electric field gradient in liquids and polymers
Number of team members: 6

Team leader: Yoav Tsori, Physicist

- 2 post doctoral fellows
- 1 Ph.D. students (Physics/Chemical Engineering)
- 1 M.S. student (Chemical Engineering)
- 2 undergraduate students

Relevance to MP1106

Research interests related to MP1106 :

- Demixing phase transitions in liquid in electric field gradients
- Nucleation of liquid droplet from the vapour phase
- Nucleation of a bubble from the liquid phase
- Separation of two liquids from each other & microfluidics
- Colloidal suspensions

Lab description

Basic facilities, equipment, devices etc :

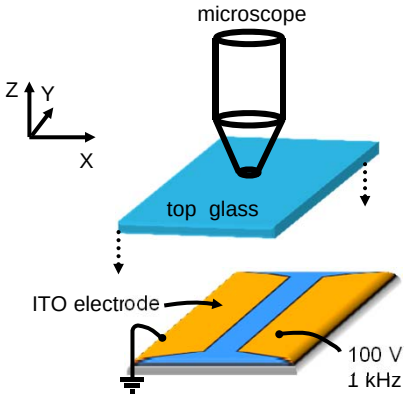
- Computer cluster (small)
- Leica SP5 confocal microscope
- Additional equipment in the “nano” center (TEM, AFM, DLS/SLS, etc.)

Projects

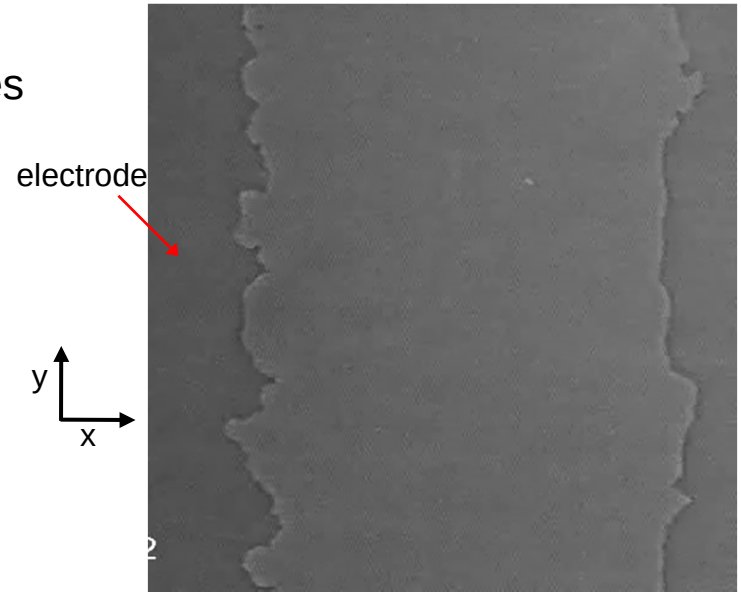
#1 project :

Title: Dynamics of phase separation in field gradients
Duration: 4 years
Funding organization: ERC
People involved and their function : 1 post-doc, 1 Ph.D. student
Facilities/equipment : theory, confocal microscope
Most interesting results: see movie

"razor-blade" electrodes



Liquids: silicon oil & paraffin
(PMPS & Squalane)



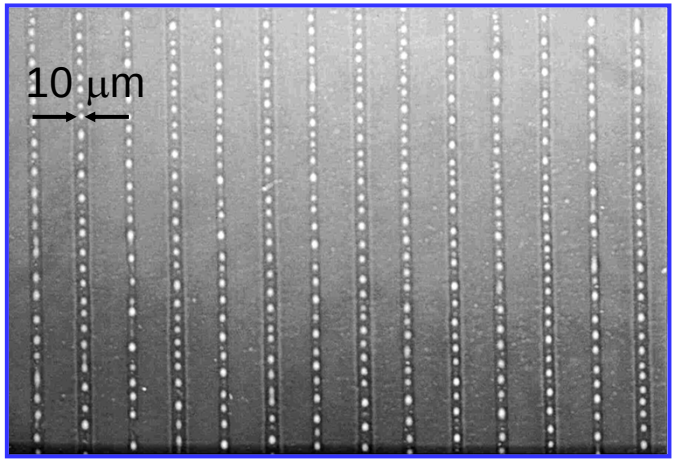
Nucleation of squalane droplets (light color)

Projects

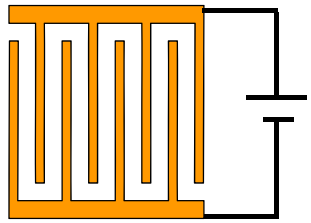
#2 project :

Title: Static interfacial instabilities in field gradients
Duration: 3 years
Funding organization: ERC
People involved and their function : 1 post-doc
Facilities/equipment : theory, confocal microscope
Most interesting results: see image.

Field on (t=5 sec)

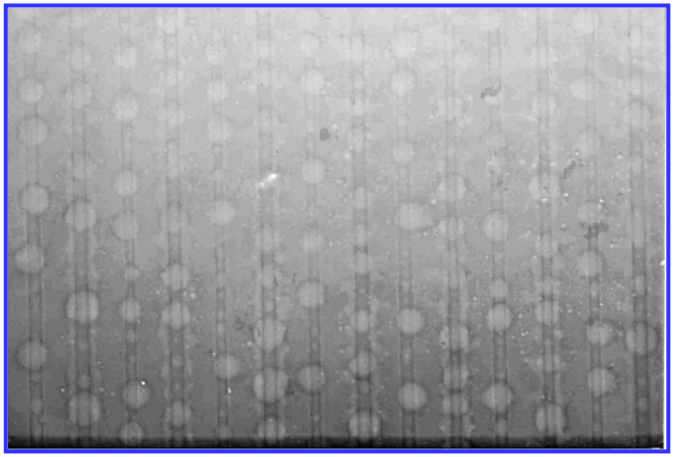


Droplet formation



reversible transition

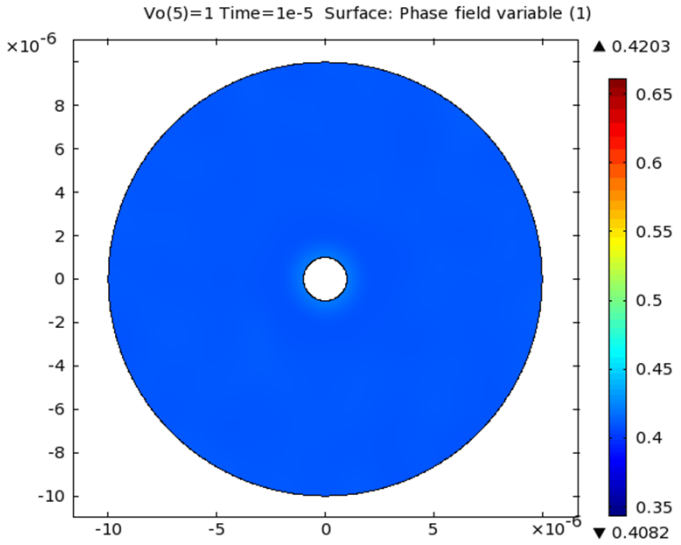
Field off (t=5 sec)



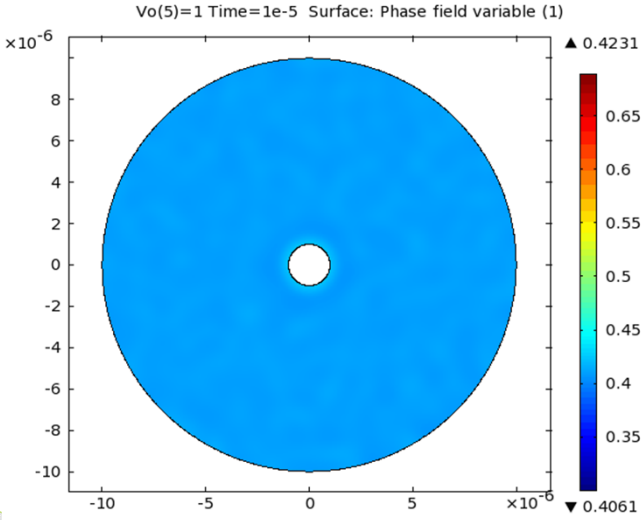
Projects

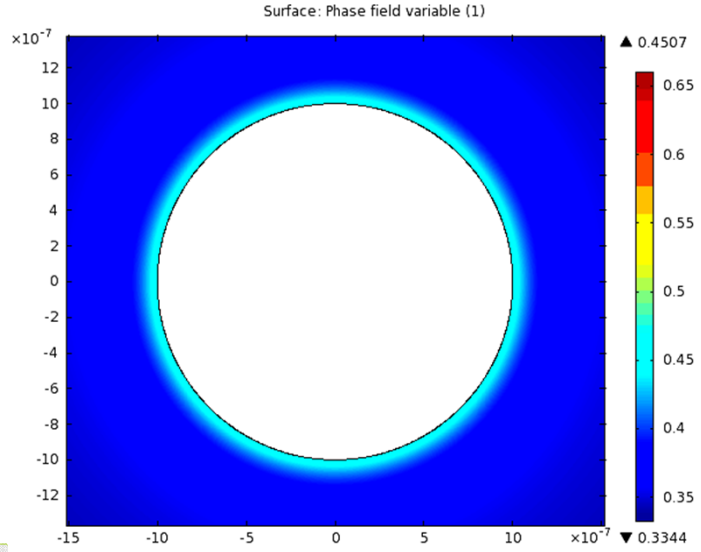
#3 project :

Title: Dynamical interfacial instabilities
Duration: 2 years
Funding organization: ERC/ISF
People involved and their function: 1 post-doc
Facilities/equipment: computer
Most interesting results: see movie



Demixing of two nonpolar liquids around a charged cylinder

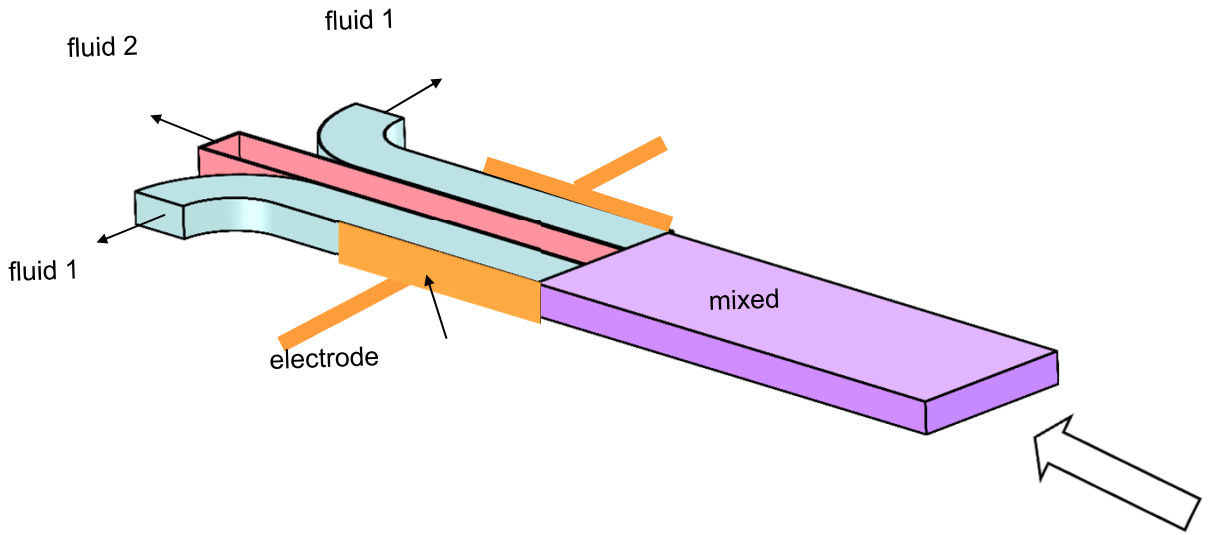




Topics for Research Proposal

#1 Topic

Title: Demixing in microfluidics
Promotion images & text:
Duration: 3 years
Expertise required: Physics, optics.
Facilities/equipment required: optical microscope



Thank you for your attention