

Research and IEEE: my parallel journey

Antonio Luque
aluque@ieee.org

Associate Professor
Department of Electronics Engineering
University of Seville, Spain

Content

I've been lucky enough to have a career in research and a career in IEEE that have benefited from each other.

This is the story of how it happened.

About me

- **Associate Professor of Electronics Engineering at the University of Seville, Spain**
- **Honorary Professor, Obuda University, Hungary**
- **Invited Professor, Harbin Institute of Technology, China**
- **Director, IEEE Region 8**
- **IEEE Board of Directors**
- **Chair, IEEE Audit Committee**

Engineering student

Engineering studies in Spain

Generalistic and wide
Electrical and electronics major
IEEE

Student Branch at the University

Computer science vs. Engineering

Research as PhD candidate

**Joined IEEE (finally!)
Started research in MEMS**

Electron Devices Society → Adrian Ionescu

EPFL in Switzerland

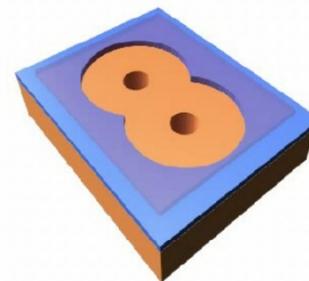
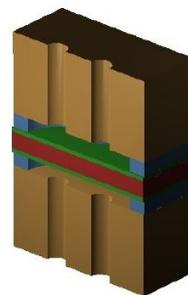
Industrial Electronics Society → Leopoldo G. Franquelo

Flagship conference in my city

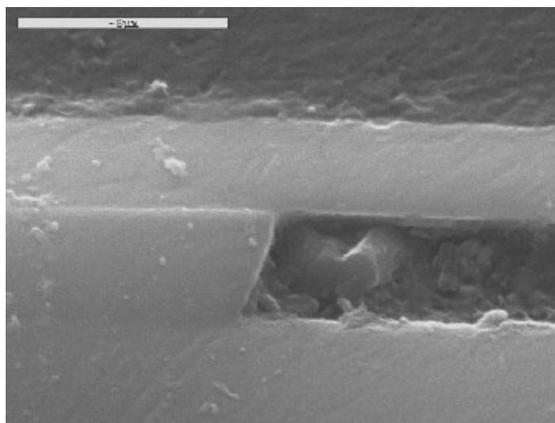
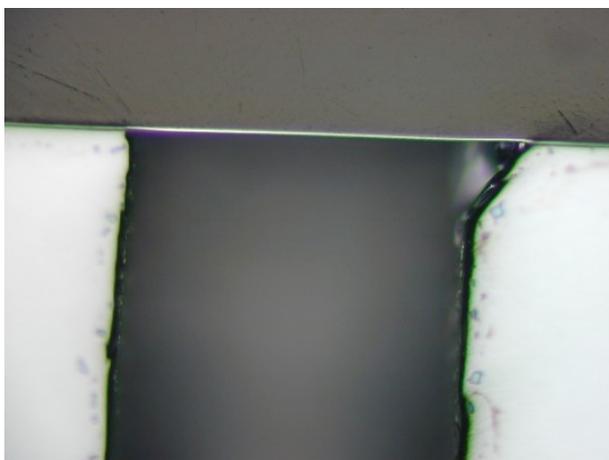
CMI at EPFL



State of the art clean room for MEMS



New techniques for free-standing membranes in polysilicon applied to high-pressure microvalves



PhD degree and first papers published.
Award from Academia Europaea

Industrial Electronics Society

Started involvement in IES

Volunteer at IECON

Web & Information Committee

Attending AdCom meetings

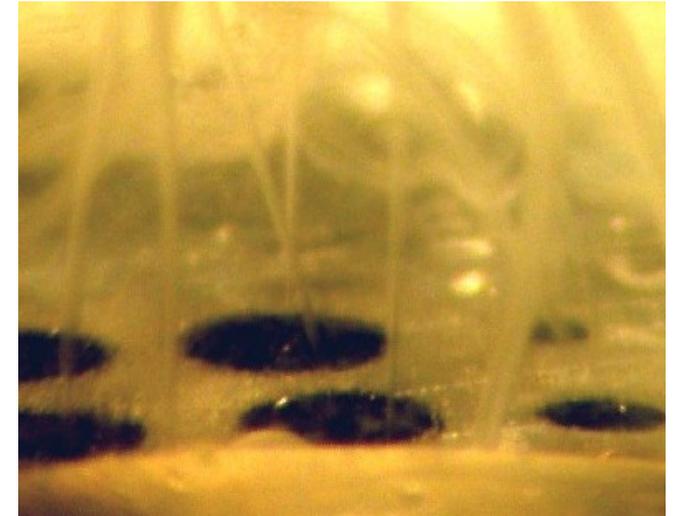
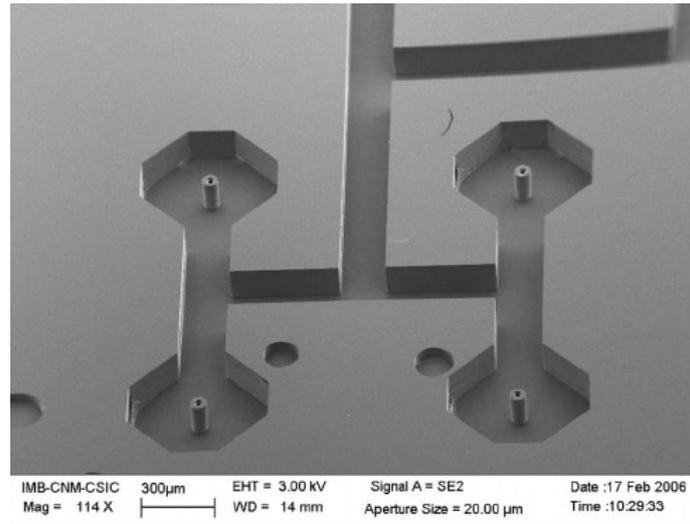
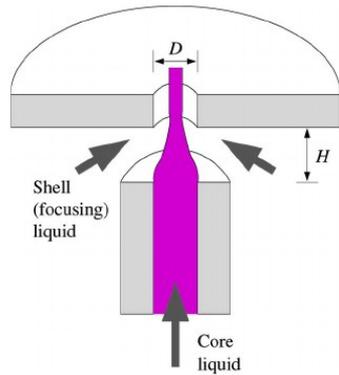
Organized tutorials and special sessions

Proposed creation of a TC on MEMS

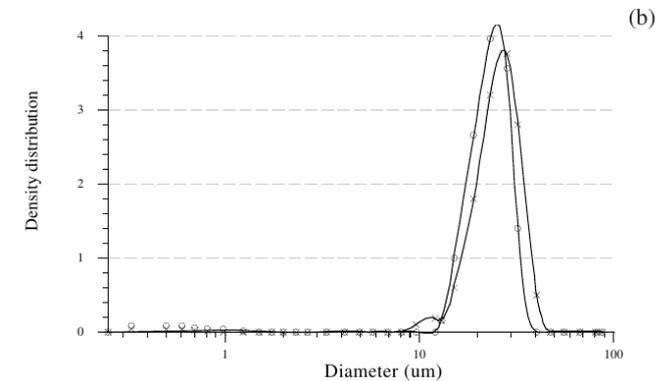
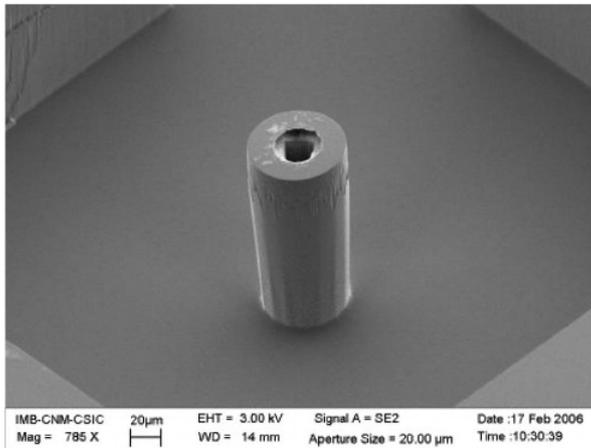


Met Stefan Gassmann and Lienhard Pagel. PCB-MEMS

Microfluidics in silicon and PCB



Continuation of the techniques developed at EPFL



Spin-off company Ingeniatics Ltd.

IEEE activities in Spain

Section only partly active

Nobody in charge of YP (and I was a YP!)

First STEP event in Spain

Attended Sections Congress 2008 in Quebec

Met Xavier Costa (TA rep to YP)

RAB and TAB in IEEE (changed to MGA then)



IES and Auburn University

IES leadership in Auburn → Bogdan Wilamowski

World university with more IEEE Fellows per capita

Alabama Micro/Nano Science and Technology Center

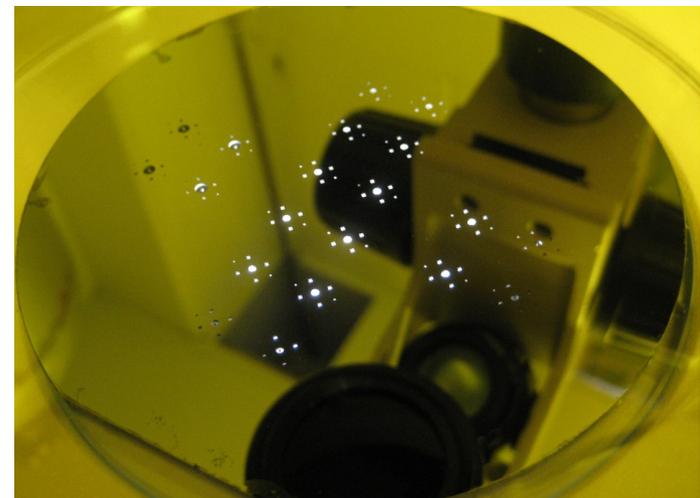
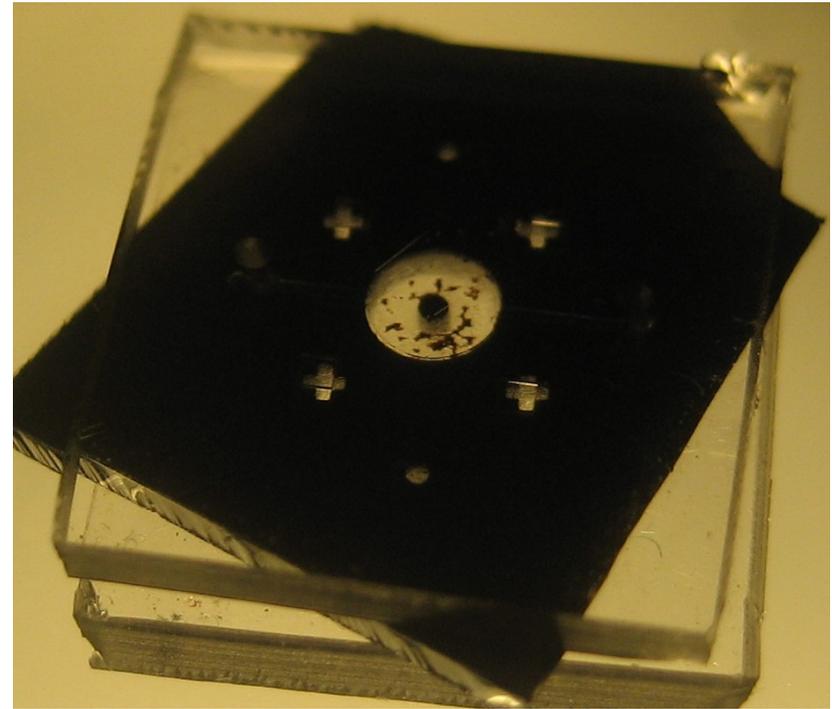
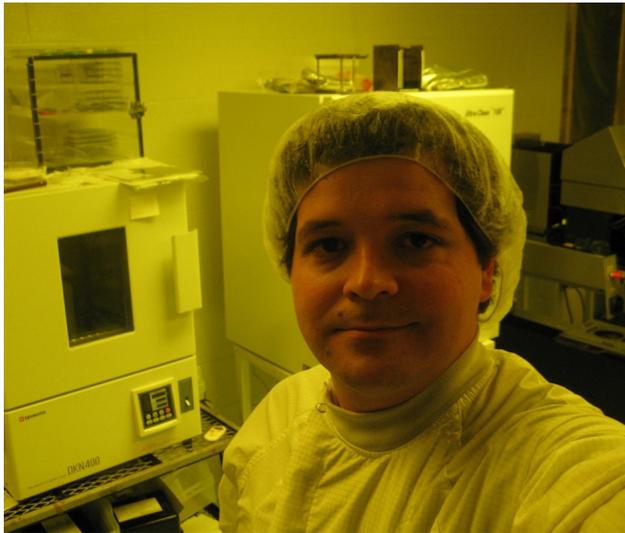
Post-doc research and employment opportunity

Met more people there → Ramesh Ramadoss

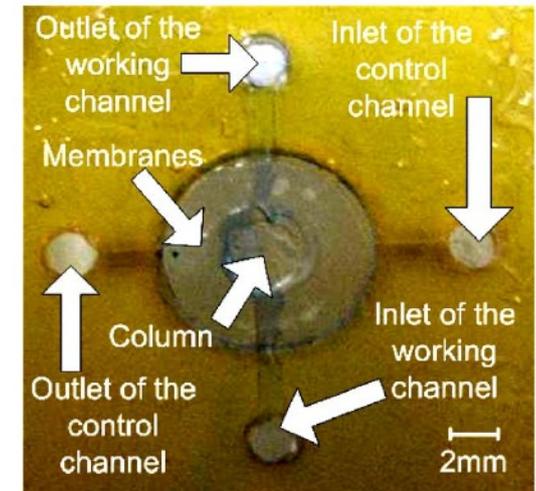
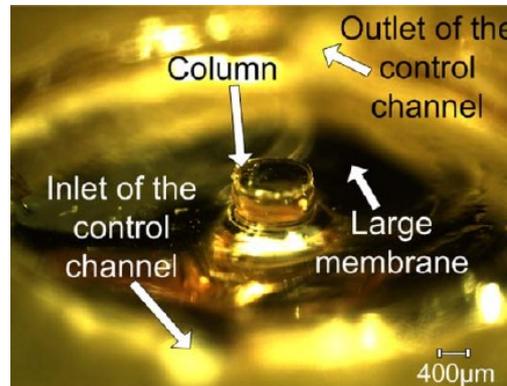
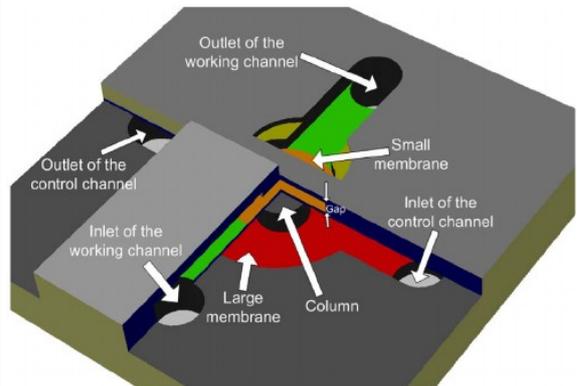
Guest editor of an IEEE Transactions



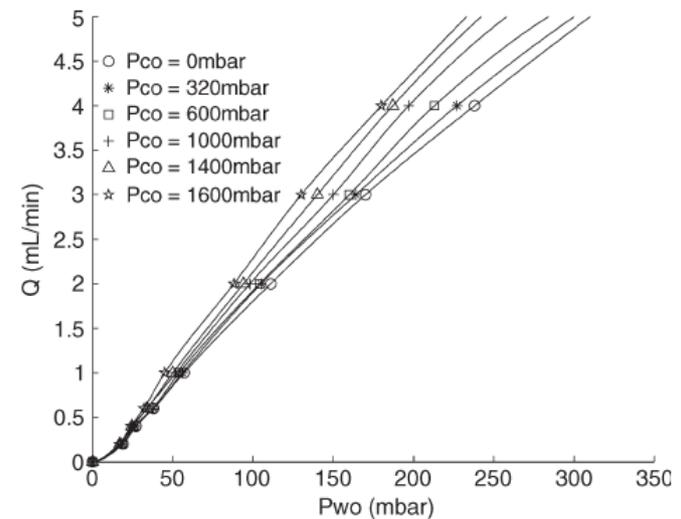
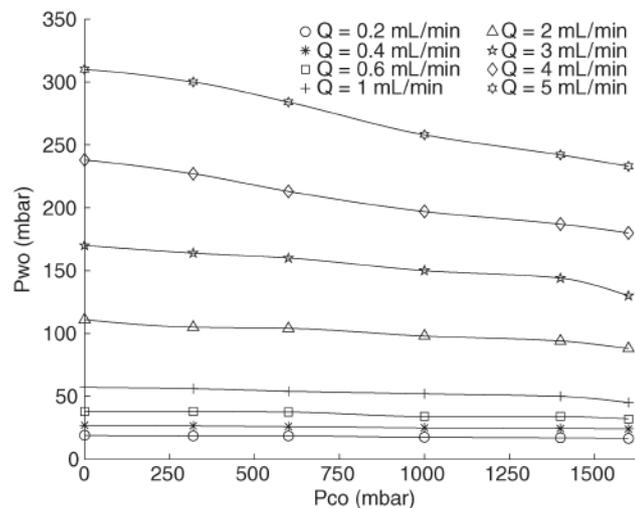
MEMS at Auburn



Microfluidics in silicon and PCB

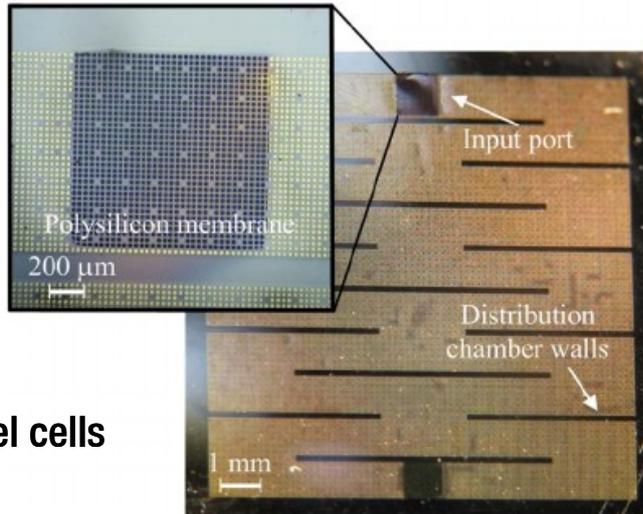


Mixed the work of Gassmann/Pagel with my research at EPFL and Auburn



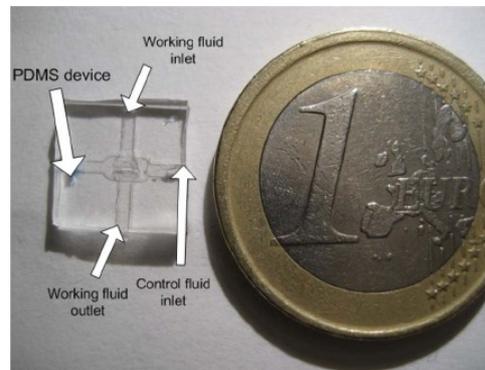
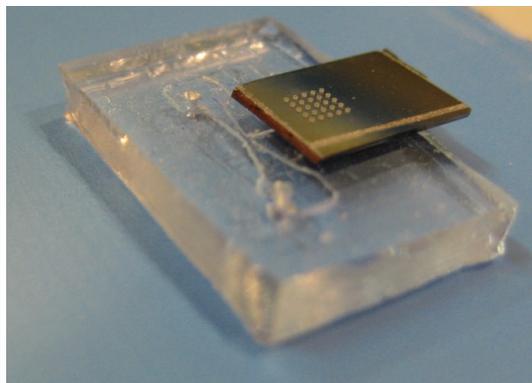
Equivalence microfluidics/electronics
First PhD thesis supervised

More MEMS projects

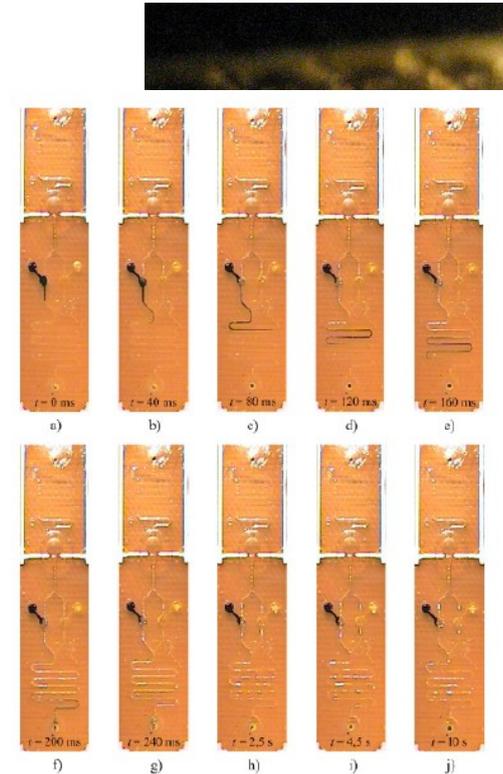


Fuel cells

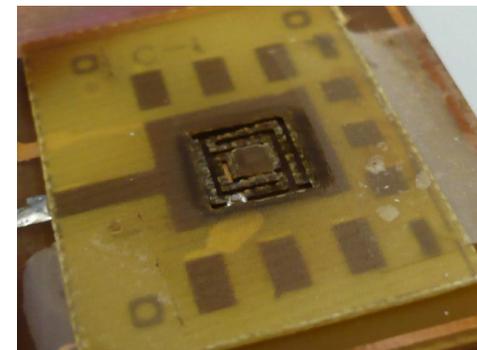
Tried different research lines before settling on one



Microfluidic devices



Lab-on-PCB



Sensors on PCB

Region 8 (Europe, Middle East and Africa)

Membership Development officer in Spain

Digging into SAMIEEE and creating custom queries

Invited to an R8 MD workshop in Leuven (almost for free)

Research stay in Delft → Stoyan Nihtianov

MD Chair in Region 8

Met R8 family for the first time

100th R8 Committee in Madrid

MRRC member and then Chair



IES and ICIT 2015

IEEE ICIT 2015 in Seville

One of the flagship conferences of IES
General Chair

Record number of participation. TCS by R8

Wonderful team of students. Many of them friends until
today. Student Branch



More IEEE

Industrial Electronics Society

AdCom member

Vice President

Associate Editor of several journals
and magazine

Rep to other units

Chair of committees



Section and Region

Section Secretary, Vice chair, Chair

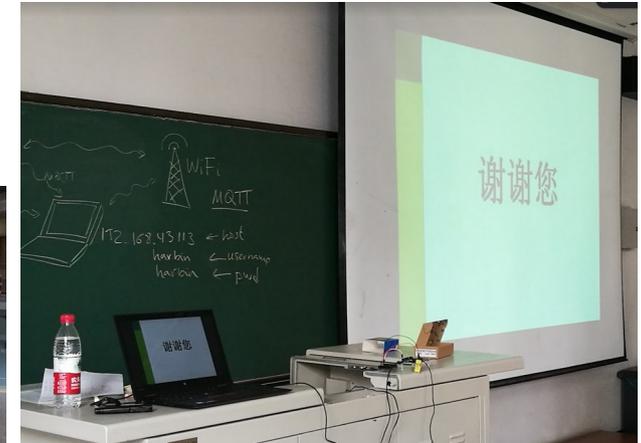
Region Vice-chair

Candidate for Director-Elect

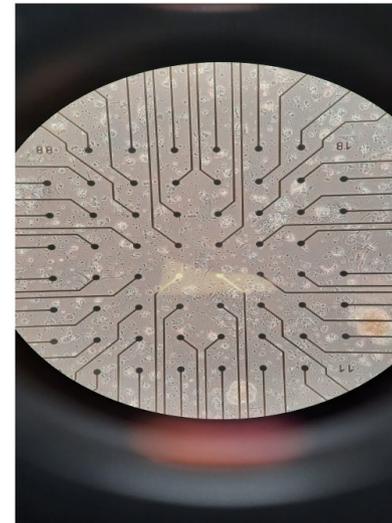
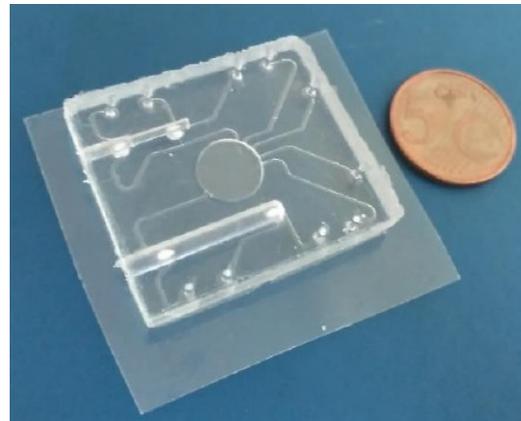
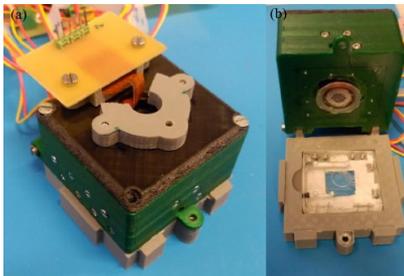
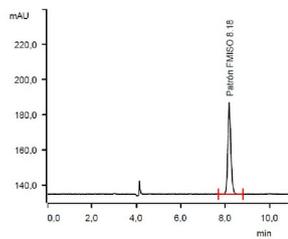


More research

La Paz, Monterrey, Wilhelmshaven, Harbin



Microsystems for biomedical applications



IEEE Board of Directors

Managing a Region is difficult
COVID pandemic
Ukraine

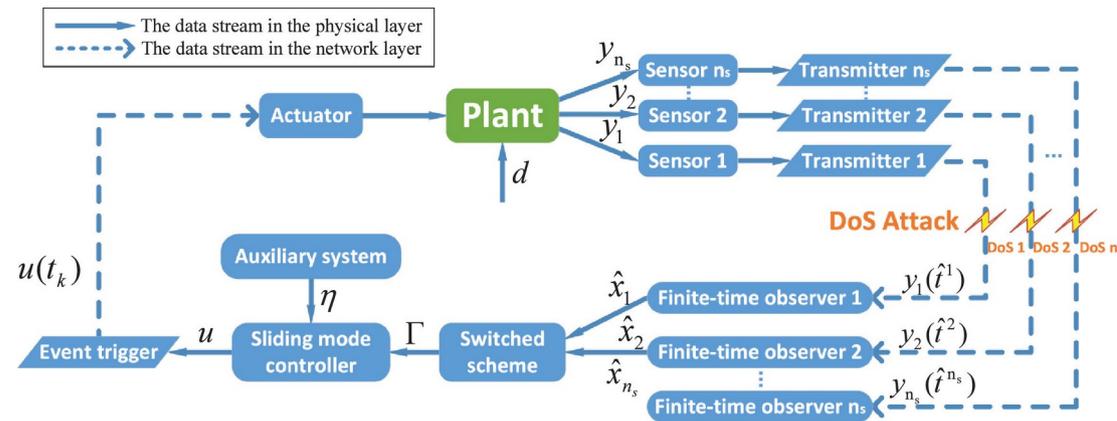
Board of Directors

Almost every place where the action is

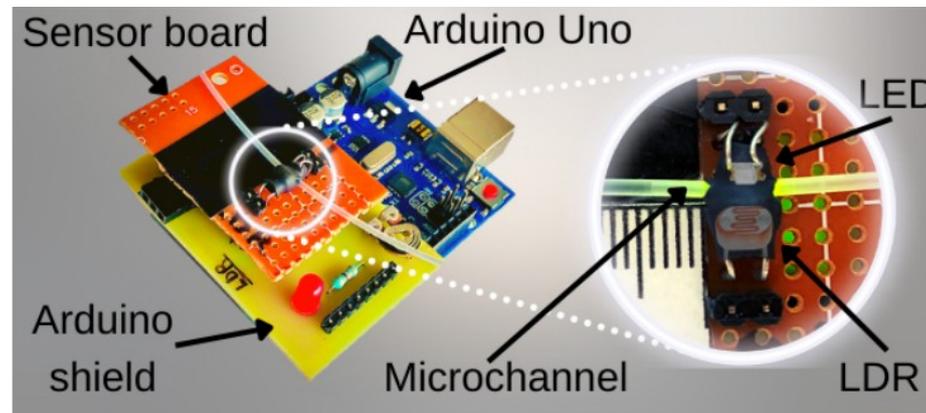
Audit Committee chair
Membership
Executive Director search
Humanitarian efforts
Constitutional amendment
Your Professional Home



Recent research



Resilient sliding mode control for a class of cyber-physical systems with multiple transmission channels under denial-of-service attacks



On the calibration of an optical, high-speed, multiphase microfluidic sensor with droplet counting applications in Lab-on-PCB devices

Lessons learned

Get inspiration from others. It is not bad to copy others and then add your own thing.

If you feel that something should be done or it is worth doing, do it. Or volunteer to do it.

“Politics” will only take you that far.



Thank you!