

STEFANO LARENTIS

Website: stefanolarentis.github.io

203 W 39th St. Apt 303 - 78751 Austin, TX
stefano.larentis@gmail.com • (512) 983-7698

Italian Citizen – Eligible for OPT

EDUCATION

University of Texas at Austin, Austin, TX

Ph.D., Electrical Engineering Track: Solid-State Electronics

08/2011 - expected 08/2018

GPA: 4.00/4.00

Politecnico di Milano and Politecnico di Torino, Milan & Turin, Italy

M.S., Electronic Engineering Track: Solid-State Electronics

09/2009 – 07/2011

GPA: 28.2/30.00

Politecnico di Milano, Milan, Italy

B.S., Electronic Engineering *summa cum Laude*

09/2006 – 07/2009

GPA: 28.94/30.00

RESEARCH EXPERIENCE ([GOOGLE SCHOLAR](#))

University of Texas at Austin, **Prof. Emanuel Tutuc group** (nano.ece.utexas.edu)

01/2012 – Present

National High Magnetic Field Laboratory, Tallahassee, FL – **Visiting researcher**

11/2016 & 04/09/2017

- Developed state of the art transfer technique to fabricate all-2D material FET and heterostructures. Designed *transition metal dichalcogenides* (TMDs) FETs process flow. Integrated dual-gated TMD FETs fully encapsulated in hBN dielectric using a bottom contact architecture to obtain *low resistance contacts*.
- Investigated TMDs (MoS_2 , MoSe_2 , MoTe_2) electron transport, measuring *mobility temperature dependence* and characterizing scattering mechanisms. Introduced a novel method to measure *TMDs band offset*, using a graphene heterostructure. Conducted magnetotransport studies to probe TMDs': *bandstructure* (determining *electrons m^** and valley population) and electron-electron interaction (negative capacitance).
- **Device fabrication:** (e-beam) lithography, dry/wet etch, e-beam deposition, sputtering, ellipsometry, ALD and oxide growth. Maintained a custom UHV annealing tool; **Material characterization:** AFM, SEM, XRD, Raman and Photoluminescence; **Device characterization:** parameter analyzer, lock-in, capacitance bridge measurements in probe-stations & cryostats at temperatures down to 1.4 K and high magnetic fields (35 T).

S. Larentis, B. Fallahazad, H. C. P. Movva, K. Kim, A. Rai, T. Taniguchi, K. Watanabe, S. K. Banerjee, and E. Tutuc, *Reconfigurable Complementary Monolayer MoTe_2 Field-Effect Transistors for Integrated Circuits*, ACS Nano (2017)

S. Larentis, J. R. Tolsma, B. Fallahazad, D. C. Dillen, K. Kim, A. H. MacDonald and E. Tutuc, *Band Offset and Negative Compressibility in Graphene- MoS_2 Heterostructures*, Nano Lett. 14 (4), 2039, (2014)

S. Larentis, B. Fallahazad and E. Tutuc, *Field-effect transistors and intrinsic mobility in ultra-thin MoSe_2 layers*, Appl. Phys. Lett., 101, 223104, (2012)

Politecnico di Milano, **Prof. Daniele Ielmini group** (home.deib.polimi.it/ielmini)

09/2010 – 08/2011

- Performed NVM cell electrical characterization (DC, pulsed) for unipolar (NiO_x) and bipolar (HfO_x) RRAMs.
- Developed resistive switching electro-thermal models, using finite-element methods, describing set, reset, multi-level operation and retention, allowing for scaling/reliability projections and disturb extrapolation.

S. Larentis, F. Nardi, S. Balatti, D. C. Gilmer, and D. Ielmini, *Resistive Switching by Voltage-Driven Ion Migration in Bipolar RRAM—Part II: Modeling*, IEEE Trans. on Electron Devices, 59, (9), 2468, (2012) ([Video](#))

S. Larentis, C. Cagli, F. Nardi, D. Ielmini, *Filament diffusion model for simulating reset and retention processes in RRAM*, Microelectron. Eng., 88 (7), 1119, (2011)

AWARDS, SOFTWARE AND TEACHING

- **INFOS 2011, Best Student Paper Award**, Grenoble, France
- **TECHCON 2014, Best in Session Award**, Austin, TX
- Matlab, COMSOL, Mathematica, Origin, LabVIEW (interfacing with instruments) user;
- **Reviewer** for APL, IEEE TNANO, IEEE TED, Nano Letters, ACS Applied Materials and Interfaces
- **TAed:** EE339 Solid-State Electronic Devices, EE363M Microwave and RF Eng., EE334K Theory of Eng. Materials