

Jorge Ávila

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Education

- 2016 – 2020 **Ph.D. in Nanoscience and Nanotechnology**, University of Valencia, Spain
Title: Charge transport and recombination layers for perovskite solar cells.
● I led the optimization of high efficient single junction perovskite solar cells, avoiding the use of doped transport layers that can introduce multiple instabilities.
● First perovskite-perovskite tandem solar cell fully prepared by sublimation methods.
Grade: Distinction Cum Laude.
- 2014 – 2016 **M.Sc. in Nanoscience and Nanotechnology**, University of Valencia, Spain
I led the fabrication and characterization of single-carrier devices to better understand the trap-assisted non-radiative recombination in perovskite solar cells. Average grade: 9.0/10
- 2010 – 2014 **B.Sc. in Chemistry**, University of Granada, Spain
Awarded Best Academic Record Prize. Average grade: 9.2/10
- 2006 – 2010 **Member of ESTALMAT**, University of Granada, Spain
Selective project for the detection and stimulus of mathematical talent including weekly lectures on mathematical topics.

Experience

- 2021 – cont **Postdoc Researcher**, *University of Granada*, Granada, Spain
Development of graphene based biosensors for disease diagnosis as COVID or cancers.
● Leading the research to improve the device reproducibility.
● Leading the implementation of photolithography to miniaturize the device fabrication.
● Achieved a qualitative detection of the Spike COVID protein.
- 2016 – 2020 **Teaching Assistant**, *University of Valencia*, Valencia, Spain
Inorganic chemistry lab courses in the chemistry and pharmacy degrees.
- 2016 – 2019 **Divulgtion activities**, *EXPOCIENCIA*, Valencia, Spain
Divultation activities at the science institute ICMOL, sharing our most recent science development to the general public.
- Jun – Sept 2019 **Visiting Student**, *King Abdullah University of Science and Technology*, KAUST, Saudi Arabia
● Development of perovskite/silicon tandem devices.
● Ellipsometry measurements and data analysis.

Skills

- Material Science** Preparation of thin layer and devices (Solar cells, LECs, transistors).
● Dry fabrication methods as physical vapor deposition, ALD, RIE.
● Spin and blade coating methods of perovskite and other semiconductor materials.
● More than 7 years of experience working in cleanroom and glovebox.
● Photolithography.
● UV-Vis, photoluminescence, RAMAN, UPS, XPS, X-ray diffraction spectroscopy.
● Ellipsometry, profilometry, optic microscopy and SEM.
● Illuminated J-V, dark diode characteristics, Electroluminescence and EQE measurements.
● Transistor and sensor characteristic measurements.

Data Analysis Data processing, statistical analysis and competencies in data presentation and visualization.

Programming Python, octave (Matlab) and SQL.

Algorithms proficiency Knowledge of data structures and algorithms.

Courses

- 2021 **Management of Urban and Hazardous Waste**, University of Granada
2020 **Machine Learning**, *Online Course*, Stanford University, Coursera

2020 **Elements of AI**, *Online Course*, University of Helsinki

2019 **Automate the Boring Stuff with Python Programming**, *Online Course*, Udemy

2017 **Experimentation with electronic equipment for low level measurements**, ETSE, University of Valencia

Languages

Spanish Native

English Professional working proficiency

Written and Spoken

Material Science Publications and Conferences Attended

Contribution in more than 15 publications.

- Featured Publications**
- High voltage vacuum-deposited CH₃NH₃PbI₃-CH₃NH₃PbI₃ tandem solar cells - Energy & Environmental Science [doi](#)
 - Interplay between temperature and bandgap energies on the outdoor performance of perovskite/silicon tandem solar cells - Nature Energy [doi](#)
 - Vapor-Deposited Perovskites: The Route to High-Performance Solar Cell Production? - Joule [doi](#)

Conferences Attendance to 11 conferences with 6 oral presentations and 2 posters.

Honors & Awards

- Grants**
- FPU Scholarship which is a national competitive grant to fund the PhD studies.
 - Collaboration Scholarship which is given to promising students to start research projects during bachelor.

2020 ● Top 5 in the Novartis Datathon - A data science challenge about predicting the behaviours of medicine sales influenced by the appearance of generic drugs.

2009 – 2010 ● Winner of 'Science in Action' National competition in the Mathematics category
● Classified in the regional Mathematics Olympics