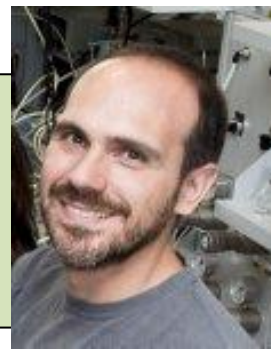


A. PERSONAL DATA

Family name, First name: **TARANCON, ALBERT**
Date of birth: 15/08/1979
URL for the institutional web site: www.irec.cat
URL of the group web site: www.atlab.es
Researcher identifier(s): Albert Tarancón (Google Scholar, [click here](#))
AAJ-6513-2020 (WoS, [click here](#))
42662872000 (Scopus, [click here](#))



• Education

2007 *PhD in Physics*, “*Summa Cum Laude*”, Faculty of Physics, UB, Spain
2007 *Materials Engineer*, Materials Department, UPC, Spain
2001 *Degree in Physics*, Faculty of Physics, Electronics Dept, UB, Spain

• Current Position

2018- *ICREA Research Professor and Head of Group at IREC*, Spain
2010- *Head of Group and Senior Researcher, Nanoionics and Fuel Cells*, IREC, Spain

• Previous Positions

2010 – 2016 *Ramon y Cajal Fellow* (*the most prestigious for young researchers in Spain*), IREC, Spain
2008 – 2010 *JAE-Doc Fellow*, Institute of Microelectronics of Barcelona (*Prof. Cané*), Spain
2007 – 2008 *Postdoc*, Inorganic Chemistry Dept (*Prof. Núñez*), ULL, Spain
2006 *Research visitor*, Materials Dept (*Prof. Kilner*), Imperial College London, UK
2005 *Research visitor, Prof. Haile’s Group*, California Institute of Technology, USA
2004 *Research visitor*, Centre for Materials Science (*Prof. Norby*), Univ. Oslo, Norway

• Teaching Activities

2014 *Ass. Prof.– Nanoenergy*, Master in Nanotechnology, UB, Spain
2008 *Asst Prof.–Funct. Mater., Mater. Processing*, Master Mater. Sci. UAB, Spain
2005 – 2007 *Asst Prof.–Appl. Electronics, Communication Systems*, Fac. of Physics, UB, Spain

• Fellowships

2010 – 2016 *Ramon y Cajal Fellowship*, Spanish Ministry of Science and Technology
2008– 2010 *JAE-Doc Fellowship*, CSIC
2001 – 2005 *Pre-Doctoral Fellowship*, UB
2004 *OSSEP Scholarship*, European Science Foundation

• Supervision of Graduate Students and Postdoctoral Fellows

2008 – 2020 *31 Postdocs/ 21 PhD/ 23 MSc-BSc Students/ 1Technician*

• Organisation of scientific meetings (selected)

2020 *Conference Organizer, 18th ECT*, Barcelona (>300 attendees)-Postponed 2022
2018 *Symposium Organizer, EMRS 2018*, Strasbourg (>3000 attendees)
2016 *Symposium Scientific Committee, EMRS 2016*, Lille (>3000 attendees)
2015 *Symposium Organizer, EUROMAT’15*, Poland (> 2000 attendees)

• Editorial services (selected)

2018 – *Journal Editor, J Phys Energy* (IoP Publishing) and *J. Eur. Ceram. Soc.* (Elsevier)
2018 *Guest Editor, Advanced Materials Interfaces*, Wiley, *Special issue*
2018 *Guest Editor, Solid State Ionics*, Elsevier, *Special Issue*

B. BRIEF ACHIEVEMENTS TRACK-RECORD AS INDEPENDENT RESEARCHER

Albert Tarancón holds **M.Sc. and PhD in Physics** from the University of Barcelona (2001, 2007) and **M. Eng. in Materials Science** from the Polytechnic University of Catalonia (2007). He has worked as a research associate at the **Institute of Microelectronics of Barcelona (ES)** and as a visiting researcher at the **University of Oslo (NO)**, **Imperial College London (UK)** and **Caltech (USA)**. In 2010, Albert gained a **Ramon y Cajal Fellowship** and joined the Catalonia Institute for Energy Research (IREC) as the **Head of the Nanoionics and Fuel Cells Group (ATlab)**. From January 2018, he is an **ICREA Research Professor at IREC and leads a group of 25+ people** devoted to nanomaterials for alternative energy technologies and their applicability in powering portable devices and synthetic fuel production.



Albert Tarancón has published **more than 125 peer-reviewed scientific papers (h>33, 4500+ citations)**, **four book chapters, two books and 100+ oral contributions to congresses (35+ invited presentations, 7+ keynotes)** and has generated **five patents**. He has been **principal investigator (PI) of 17 public research projects** (10 at the EU level including one **1.9 M€ ERC-Consolidator Grant and three H2020 coordinated projects**) and **7 research contracts with industry**, attracting a total amount of **20+ M€ (8.5+ M€ for IREC)**. He is currently **editor of J Phys Energy (IoP publishing) and J. Eur. Ceram. Soc.** (Elsevier) and Guest Editor for Special Issues in **Advanced Materials Interfaces (Wiley) and Solid State Ionics (Elsevier)**.



Albert is currently **leading an international team of 25+ researchers** with an **annual budget above 1M€** mainly corresponding to **6 ongoing projects (4 at the EU level)**. In the last years, **9 PhD theses** were defended with highest honours under Albert's supervision. Afterwards, **the new doctors reached excellent positions widening the international network of the team**, namely, Dr. Dávila is currently working as permanent staff at **IBM-Zurich (CH)**, Dr. Garbayo was postdoctoral researcher at **ETH-Zurich (CH)** and senior researcher at IREC, Dr. Almar was working as a postdoctoral researcher at **KIT (DE)**, Dr. Pla obtained a **Marie Curie IF** at **CNRS-Grenoble-INP (FR)** and Dr. Gerard Gadea and Dr. Chiabrera are postdoctoral researchers at the **University of Basel (CH)** and **DTU (DK)**. The success in attracting excellent PhD students has yielded outstanding outcomes including awards, publications in top journals and oral/invited presentations in major international conferences.



Picture of Nanoionics and Fuel Cells Group headed by Albert at IREC

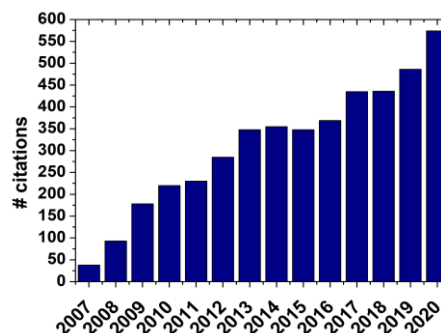


Panoramic views of the ATlab at IREC

C. SCIENTIFIC PRODUCTION AND INTERNATIONAL IMPACT

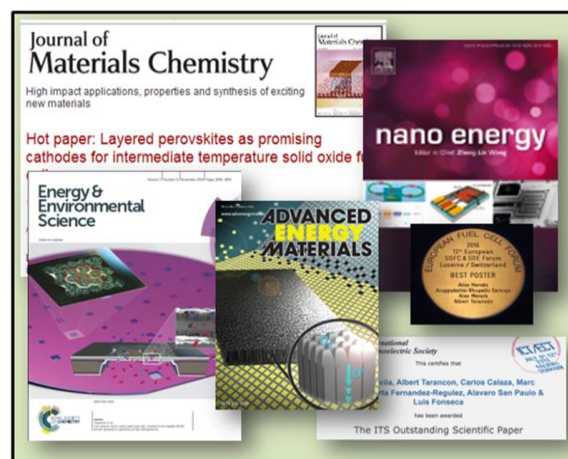
During his career, Albert Tarancón has published more than **75 peer-reviewed articles in ISI Indexed Journals with Impact Factor** (125+ including ISI Indexed peer-reviewed conference proceedings) with **4500+ citations** and holds **h-index>33 and i10-index=63 (Google Scholar)**. Albert has **15 papers with > 100 citations**. The figure below shows the evolution of the number of citations per year showing a **consolidated growth of attracted citations**.

TOP 5 Journals Publications		
Journal Title	Impact Factor	# articles
<i>Energy and Environmental Science</i>	33.25	3
<i>Advanced Materials</i>	27.39	1
<i>Advanced Energy Materials</i>	25.24	1
<i>Nano Energy</i>	16.60	3
<i>Nature Communications</i>	12.12	1



Distribution of citations/year for Albert's papers

In recognition of the relevance of the scientific contributions some of the papers recently published were highlighted in different ways. **Five papers were ranked in the 1% worldwide top cited papers** within the field of Materials Science (according to ISI WOK-Essential Science Indicators); **six papers were selected as “hot papers”** by leading multidisciplinary journals. Papers on first worldwide proofs of the integration of silicon nanowires in μ TEGs, grain boundary engineering of MIEC materials and full-ceramic micro-SOFCs were selected as **cover images** of the corresponding issues in top journals such as *Nano energy*, *Adv. Energy Mat.* and *Energ. Environ. Sci.*, respectively. In addition, among others, **three papers were recently awarded** with the “*Solid State Ionics 2010 Best Paper Award*”, “*2012 ITS Outstanding Scientific Paper*” and the “*2nd Place - Best Paper Award at the 38th ICACC*,” by the International Societies of Solid State Ionics, Thermoelectricity and the American Ceramic Society, respectively.



Some highlighted and awarded papers

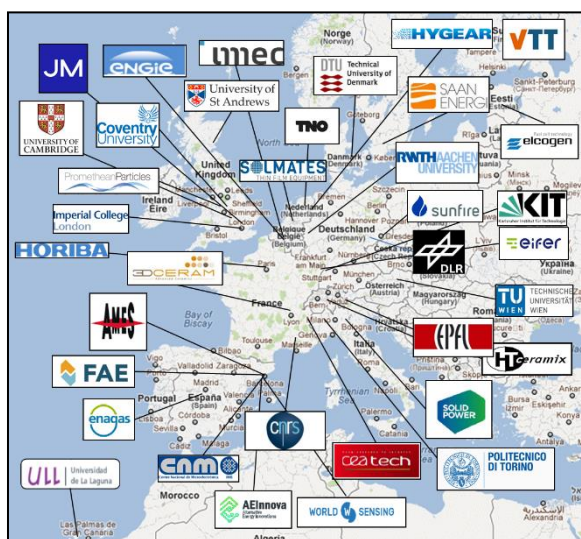
During his career, Albert has co-authored **200+ contributions to international congresses** (40+ peer-reviewed ISI indexed conference proceedings and a total of **140+ oral contributions with 40+ invited talks and 7+ keynotes**). In recognition of the most relevant results obtained in the last years, Albert has been **invited to give several conferences and seminars in prestigious universities and research institutions** such as DTU (DK), Imperial College (UK) or ETH-Zurich (CH).

A consolidated leading position of Albert in the international community resulted in the **organization of several international symposiums at different levels** (organizing committee, scientific committee, executive committee, session chairman). Among them, it is interesting to highlight the organization of a symposium in the reputed **EUROMAT congress in 2015** (*A.I.I. Materials for Energy Harvesting*), the organization of the **Functional Oxide Thin Film for Advanced Energy and Information Technology Conference Series** with an astonishing list of speakers (click [here](#)) and the assignment of the organization of several editions of the well-established biannual **Solid State Ionics symposium at EMRS 2018 and EMRS 2020** (postponed 2021).

In order to better estimate the **international impact of the research work developed by Albert Tarancón**, the figure below shows the **citing article network map** (automatically generated by ISI WOK), which shows that institutes from almost **all the important research areas in the world** (USA, Japan, India or China) have cited some of the most relevant results published by Albert during the last 5 years.



This global impact is directly related to the fact that Albert has been linked through international collaborations with some of the leading groups in SOFC and microsystems of Europe, USA and Japan. The attached image shows the **collaboration network map** of our group at the EU level (based on joint projects). Among other institutes Albert has a strong relationship with **Imperial College (UK), Cambridge (UK), MIT (USA), ETH-Zurich (CH), IMEC (BE), CNRS (FR), ICN2(ES) or IMB-CSIC (ES)**.



The extent of the international impact of the research activity carried out by Albert can be also evaluated by his **intense participation in international projects** (see more details in “Section D. Funding ID” and the therein included “EU partners’ map”). In this sense, **Albert has been PI of 10 EU projects and is currently coordinating two H2020 actions** from the FET-Proactive programme (HARVESTORE, www.harvestore.eu, 7M€ and EpiStore, 5M€) and **holds a 1.9M€ ERC Consolidator Grant, the most prestigious contract in Europe**, for developing micro-SOFCs (www.ultrasofc.eu).

Finally, Albert is promoting **the international visibility and the capacity of influencing in the EU policies by actively participating in several international platforms and initiatives** (as representative of IREC). Among others, it is important to mention the influents Fuel Cell and Hydrogen Joint Undertaking (**FCH JU**, www.fch.europa.eu), the Energy Materials Industrial Research Initiative (**EMIRI**, www.emiri.eu) and the European Energy Research Alliance (**EERA Fuel Cells and Hydrogen Joint Program**, <http://www.eera-set.eu>).



- **Selected list of papers in journals.** Click [here](#) for an updated record.

Title: *Layered perovskites as promising cathodes for intermediate temperature solid oxide fuel cells*

Authors: **A. Tarancón***, S. J. Skinner, R. J. Chater, F. Hernández, J. A. Kilner

Source: *J. Mater. Chem.* 17 (2007) 3175

Impact Factor and citations: **11.30**; **390+** citations

Highlights: Selected as **Hot Paper**. Included in the **1% worldwide top cited papers within the field of Materials Science** (ISI WOK-Essential Science Indicators)



Title: *Oxygen diffusion in solid oxide fuel cell cathode and electrolyte materials: mechanistic insights from atomistic simulations*

Authors: A. Chroneos*, B. Yildiz*, **A. Tarancón***, D. Pla, J. A. Kilner

Source: *Energy Environ. Sci.*, 4(2011) 2774

Impact Factor and citations: **33.25**; **330+** citations

Highlights: Included in the **1% worldwide top cited papers within the field of Materials Science** (according to ISI WOK-Essential Science Indicators)



Title: *Full ceramic micro solid oxide fuel cells: towards more reliable MEMS power generators operating at high temperatures*

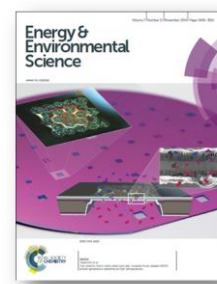
Authors: I. Garbayo, D. Pla, A. Morata, L. Fonseca, N. Sabaté, **A. Tarancón***

Source: *Energy Environ. Sci.*, 7 (2014), 3617

Impact Factor and citations: **33.25**, **60+** citations

Highlights: Selected for the **front cover** of the issue. **First worldwide proof** of all-ceramic micro-SOFCs

Notes: Albert Tarancón was the supervisor of Iñigo Garbayo's PhD thesis



Title: *Engineering Mixed Ionic Electronic Conduction in $La_{0.8}Sr_{0.2}MnO_{3+\delta}$ Nanostructures through Fast Grain Boundary Oxygen Diffusivity*

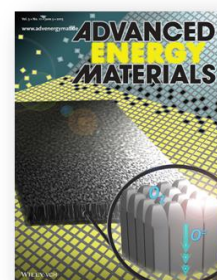
Authors: A. M. Saranya, D. Pla, A. Morata, A. Cavallaro, J. Canales, J. A. Kilner, M. Burriel*, **A. Tarancón***

Source: *Advanced Energy Materials*, 5 (2015) 1500377

Impact Factor and citations: **24.48**, **50+** citations

Highlights: Selected for the **cover** of the issue.

Notes: Albert Tarancón was the supervisor of A. M. Saranya's PhD thesis



Title: *Three dimensional printing of components and functional devices for energy and environmental applications*

Authors: JC Ruiz-Morales*, **A. Tarancón***, J Canales-Vázquez*, J Méndez-Ramos, L Hernández-Afonso, P Acosta-Mora, JR Marín Rueda, R Fernández-González

Source: *Energy Environ. Sci.*, 4 (2017), 843

Impact Factor and citations: **33.25**, **120+** citations

Highlights: Included in the **1% worldwide top cited papers within the field of Materials Science** (according to ISI WOK-Essential Science Indicators)



- **Selected list of keynotes and invited talks**

Title: *Grain Boundary Engineering to Improve Ionic Conduction in Thin Films for Micro-SOFCs*

Conference: **228th ECS Meeting**

Meeting place and date: Phoenix, USA, October 2015



Title: *Artificial mixed ionic electronic conductors by grain boundary engineering*

Conference: **E-MRS 2016**

Meeting place and date: Lille, France, May 2016



Title: *Silicon-based Nanowires for Fully Integrated Micro Thermo-Electric Generators*

Conference: **MRS 2017**

Meeting place and date: Phoenix, USA, April 2017



Title: *Changing the nature of MIECs by implementation of interface-dominated nanostructures in solid state devices*

Conference: **21st International Conference of Solid State Ionics (SSI-21)**

Meeting place and date: Padova, Italy, June 2017



Title: *The role of grain boundaries in MIEC oxygen electrodes*

Conference: **22nd International Conference of Solid State Ionics (SSI-22)**

Meeting place and date: Pyeongchang, Seoul, South Korea, June 2019

Title: *3D printing of ceramics for applications in SOFCs*

Conference: 43rd International Conf. and Expo on Advanced Ceramics and Composites (**ICACC**), American Ceramic Society

Meeting place and date: Florida, USA, January 2019.



- **Selected list of awards**

Award: **2nd Best Paper Award at the 38th ICAAC**, for the paper “*Fabrication and Characterization of a Micro-Reformer Unit Fully Integrated in Silicon for Ethanol Conversion*”, presented at the 38th ICACC, Daytona Beach, FL (USA) January 2014.

Institution: American Ceramic Society

Award: **Christian Friederich Schoenbein Bronze Medal**, for the work “*High-throughput screening of SOFC cathode materials*”, presented at the 12th European SOFC/SOEC Forum, Lucerne, Switzerland, July 2016

Institution: European Fuel Cell Forum

Award: **BEST INNOVATION PRIZE** for the Cell3Ditor project, presented at the FCH JU Review Days, Brussels (Belgium), December 2018

Institution: European Commission (Fuel Cells and Hydrogen Joint Undertaking)

Award: **SOLAR IMPULSE EFFICIENT SOLUTION**, for the Cell3Ditor solution, April 2020.

Institution: Solar Impulse Foundation



D. SCIENTIFIC AND INDUSTRIAL PROJECTS (FUNDING ID)

During his career, Albert has been actively involved in **36 research projects** being the **principal researcher for his institution in 16 of them**. Albert has been PI of **10 EU projects including a currently ongoing ERC-Consolidator Grant and three H2020 coordinated actions (two FET Proactive projects)**. This intense participation in EU proposal resulted in a strong international collaboration network (see collaboration map in previous sections). In addition, Albert has recently signed **5 research contracts with industry** for developing new technologies. By adding up all the projects as PI, **Albert Taranc3n has attracted a total amount of 20+ M€** for research in SOFC/SOEC, microSOFC and micropower sources. The following tables show selected past and ongoing projects in which **Albert was or is the principal investigator**.

- **Selected list of competitive projects**

Project Title	Funding source	Amount (Euros)	Period	Role
<i>Silicon Friendly Materials and Device Solutions for Microenergy Applications (SiNERGY)</i>	EU, FP7-NMP # 604169	588.000	2013-2015	PI
<i>Enhanced durability materials for advanced stacks of new solid oxide fuel cells (ENDURANCE)</i>	EU, FP7-JTI FCH # 621207	395.000	2014-2016	PI
<i>Development of cost effective manufacturing technologies for key components or fuel cells (Cell3Ditor)</i>	EU-H2020-JTI-FCH # 700266	2.180.000 (503.000 IREC)	2016-2020	Coordinator
<i>Efficient Co-Electrolyser for Efficient Renewable Energy Storage (ECo)</i>	EU-H2020-JTI-FCH # 699892	323.000	2016-2019	PI
<i>Breaking the temperature limits of Solid Oxide Fuel Cells: Towards a new family of ultra-thin portable power sources (ULTRASOFC)</i>	EU-H2020-ERC-CoG # 681146	1.886.000€	2016-2021	PI
<i>Energy HarveStorers for Powering the Internet of Things (HARVESTORE)</i>	EU-H2020-FETPROACT # 824072	7.600.200€ (964.000€)	2018-2023	Coordinator
<i>Thin Film Reversible SOCs for Ultracompact Electrical Energy Storage (EpiStore)</i>	EU-H2020-FETPROACT # 101017709	4.599.130 (682.500 NIFC)	2020-2024	Coord.

- **Selected list of industrial direct contracts**

Project Title	Funding source	Amount (Euros)	Period	Role
<i>Development of high temperature solid oxide electrolyzers for co-electrolysis of CO₂ and water</i>	Industry	176.000	2013	PI
<i>Scalable Processes for the Fabrication of Intermediate Temperature SOFC Stacks for Auxiliary Power Units</i>	EU, EUREKA # 64470	145.000	2014-2015	PI
<i>Ceramic 3D printing for energy applications</i>	Industry	75.000	2017-2019	PI
<i>Evaluation of PLD-deposited diffusion barrier layers for SOFC cathodes</i>	Industry	72.000	2019-2020	PI

- **List of selected project outputs (patents and products)**

Patent: *Solid Oxide Electrolytic Membrane based on Doped Silicon Nerves for Micro Fuel Cells Applications*, I. Garbayo, N. Sabaté, M. Salleras, A. Morata, **A. Tarancón***. Ref: WO2013190164A1 (2013).

Patent: Solid state electrochemical sensor and fabrication method, A. Morata, I. Garbayo, **A. Tarancón**, L. Fonseca, M. Salleras, J. R. Morante. Ref: WO12092956 (2016)

Patent: *Nanostructures of concentric layers*, A. Morata, **A. Tarancón**. G. Gadea. Ref: WO2016198712 (2017)

Patent: *Electrochemical cell device for use in a SOFC and/or a SOEC and methods for operating a SOFC or a SOEC by using thereof*, **A. Tarancón**, M. Torrell, M. Núñez, A. Pesce. Ref: EP 3754768A1 (2020)

Product: Solid Oxide Fuel Cell stack for mass production developed in collaboration with FAE (cells) and AMES (interconnect) (including 1kW electrolyser prototype)



Product: Multimaterial hybrid robocasting-SLA 3D printer for ceramics. Development of inks, slurries and devices together with 3DCeram within the Cell3Ditor project.

