

From: Prof Luis Fonseca, IMB-CNM (CSIC), Spain

To: ETS Board and thermoelectric community



It is my pleasure to present my candidacy to renew my current position in the Board of ETS.

I am a physicist by training and hold a research professor position at the **Spanish National Research Council (CSIC)**. My career has developed entirely at **Institute of Microelectronics of Barcelona – National Center of Microelectronics, IMB-CNM (CSIC)** dating back more than 35 years, when I joined it in 1989 with a predoctoral fellowship.

After my PhD in very thin gate oxides, I gained a deep technological knowledge working as process engineer at the IMB-CNM Cleanroom, the largest in Spain. There I worked closely with AT&T in the transfer of a 2.5 μm CMOS technology, as well as developing several processes that facilitated the expansion of IMB-CNM to the MEMS arena. In 2001, I joined as a senior scientist the IMB-CNM Microsystems Group. My field of research has focused in the development of micro and nanotechnologies to manufacture microdevices and systems; first, aiming at gas sensing, especially optical (infrared) gas sensors, while lately developing microgenerators to provide energy autonomy to microsystems. **In this field, I have pioneered works on thermoelectricity exploiting silicon nanowires as thermoelectric material, trying to pave the way for all-silicon microgenerators. This work has been further extended, always trying to exploit the scalability of silicon technologies combined with the flexibility of MEMS processes to define thermal isolated microplatforms onto which integrate thin films or nanoobjects assemblies with thermoelectric properties.**

It is this transversality and scalable manufacturing background, beyond pure material research, that I find a distinctive contribution of mine to the ETS Board.

I have supervised four PhD theses, count with over 150 publications (Scopus) including 100 published papers with near 2800 citations (h-index 27); half of them published in D1 journals and three quarter of them in Q1 journals. I have participated in more than 270 conferences (44 of them invited), mostly international. I have been involved in 75 national (53) and international (22) projects, having led 14 of the national actions and being CSIC PI of 13 of the EU ones.

My responsibilities in the EU projects have been of special relevance in:

GoodFood - *Food Safety and Quality Monitoring with Microsystems* (FP6, first acting as deputy coordinator), **SiNERGY** - *Silicon Friendly materials and device solutions for microenergy applications* (FP7, acting as coordinator), **HARVESTORE** - *Energy HarveStorers for Powering the Internet of Things* and **EPISTORE** - *Thin Film Reversible Solid Oxide Cells for Ultracompact Electrical Energy Storage* (two H2020 FET projects, acting as WP leader). I am also recently involved in the European Pilot Line APECS – *Advanced Packaging for Electronic Component and Systems* and in the Chip Competence Center MicroNanoSpain both tools of the Chips Join Undertaking (EU Chips Act).

The team I have been leading has received different best scientific work awards in the thermoelectric and microenergy domain:

- o Best oral: International Conference of Thermoelectrics 2012, Aalborg
- o Best EU project poster: Industrial Technologies 2016, Eindhoven
- o Best poster: International Conference of Thermoelectrics 2018, Caen
- o Best oral contribution, EUROSOL-ULIS 2023, Tarragona
- o Best Potential Application, European Thermoelectrics Conference 2023, Praga

In those fields, I have organized different symposia and conferences, e.g. EMRS-Symposium W, Lille 2016; SPIE Microtechnologies, Barcelona 2017; Micromachine Summit, Barcelona 2017; Smart Systems Integration Conference, Barcelona 2019). It is noteworthy the organization in **2022 of the European Conference of Thermoelectrics in Barcelona, the first thermoelectric face-to-face meeting after the COVID pandemics.**