



UNIVERSIDAD
POLITÉCNICA
DE MADRID



CEMDATIC

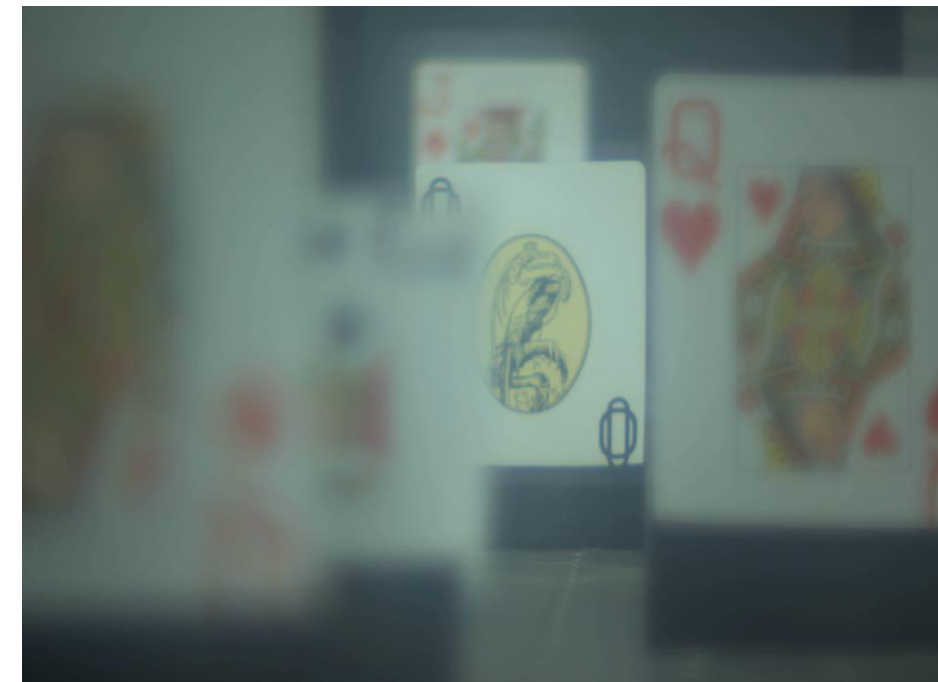
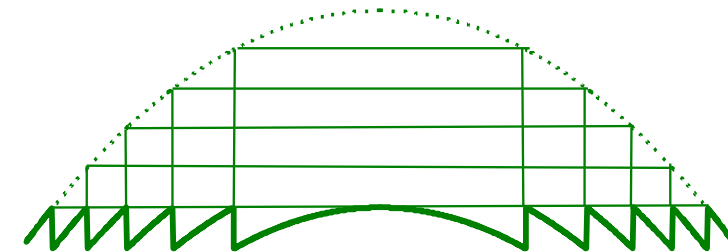
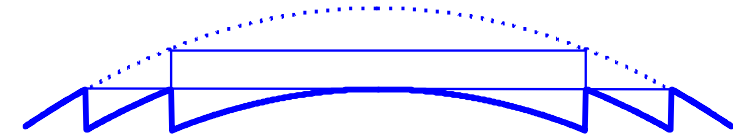
Centro de materiales y dispositivos avanzados para las TICs

Center for Advanced Materials and Devices for ICT

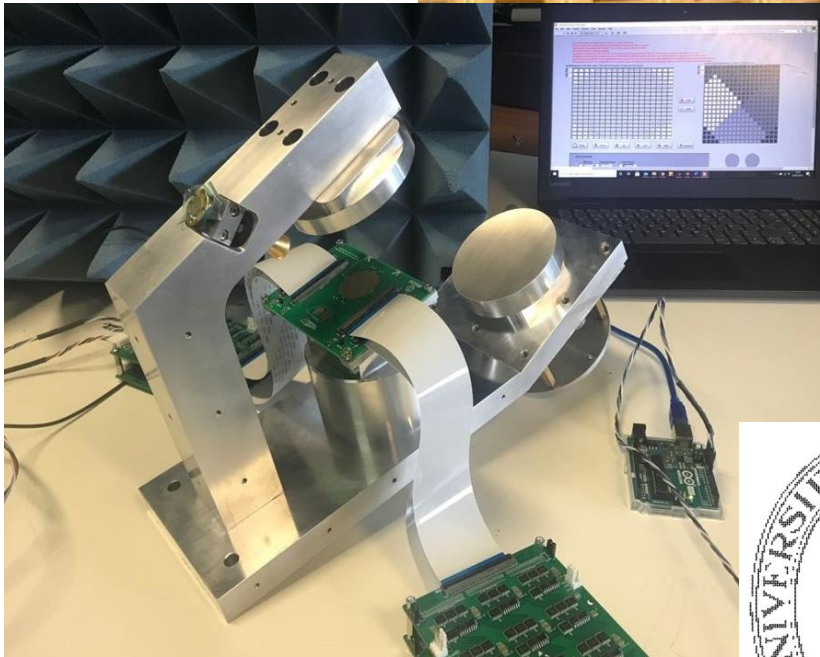
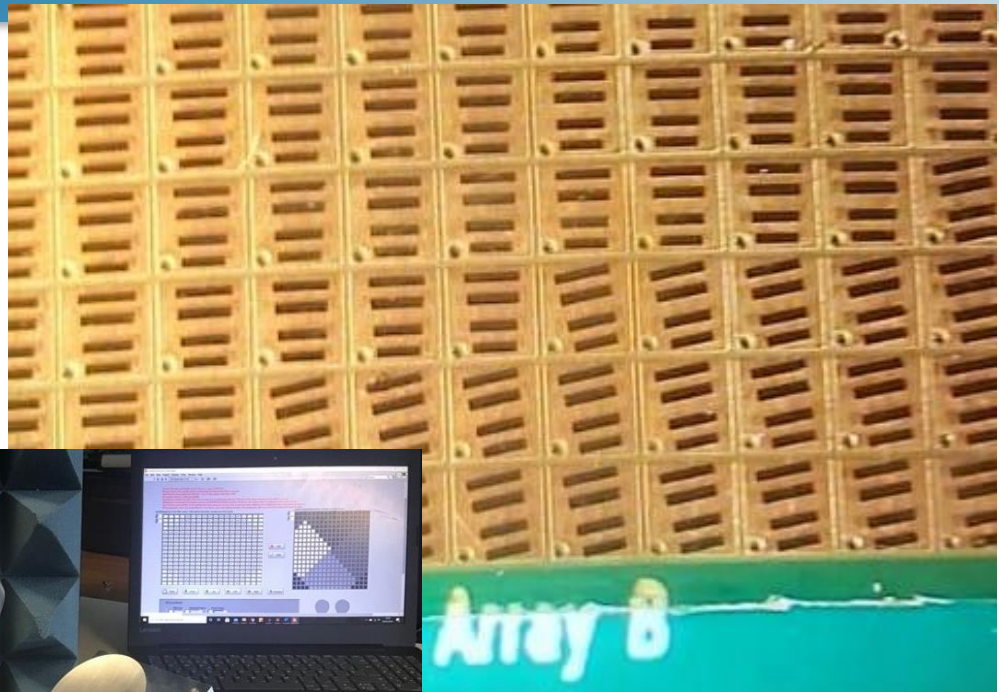
Contact: morten.geday@upm.es



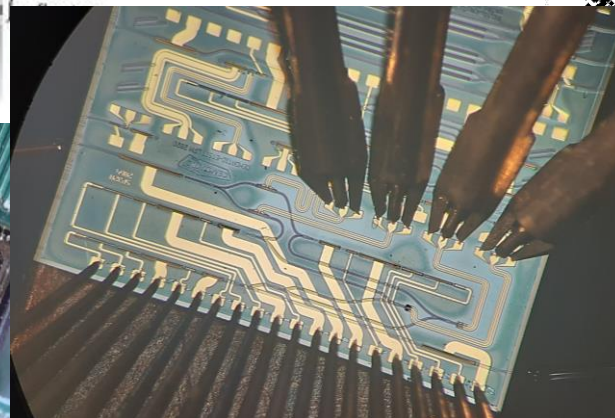
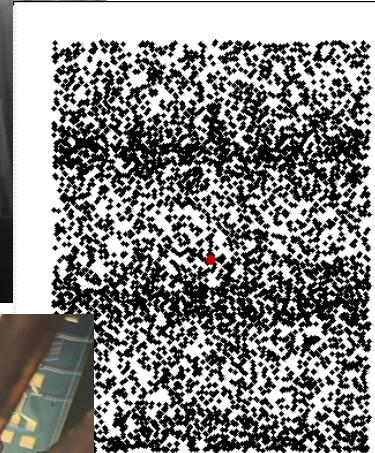
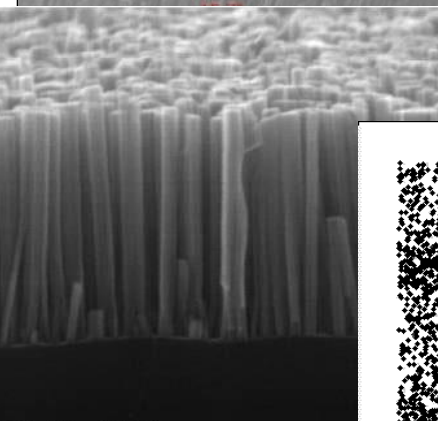
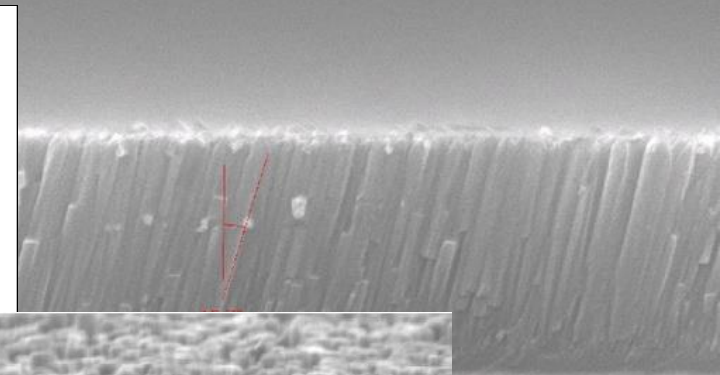
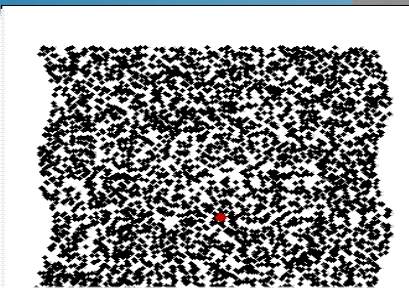
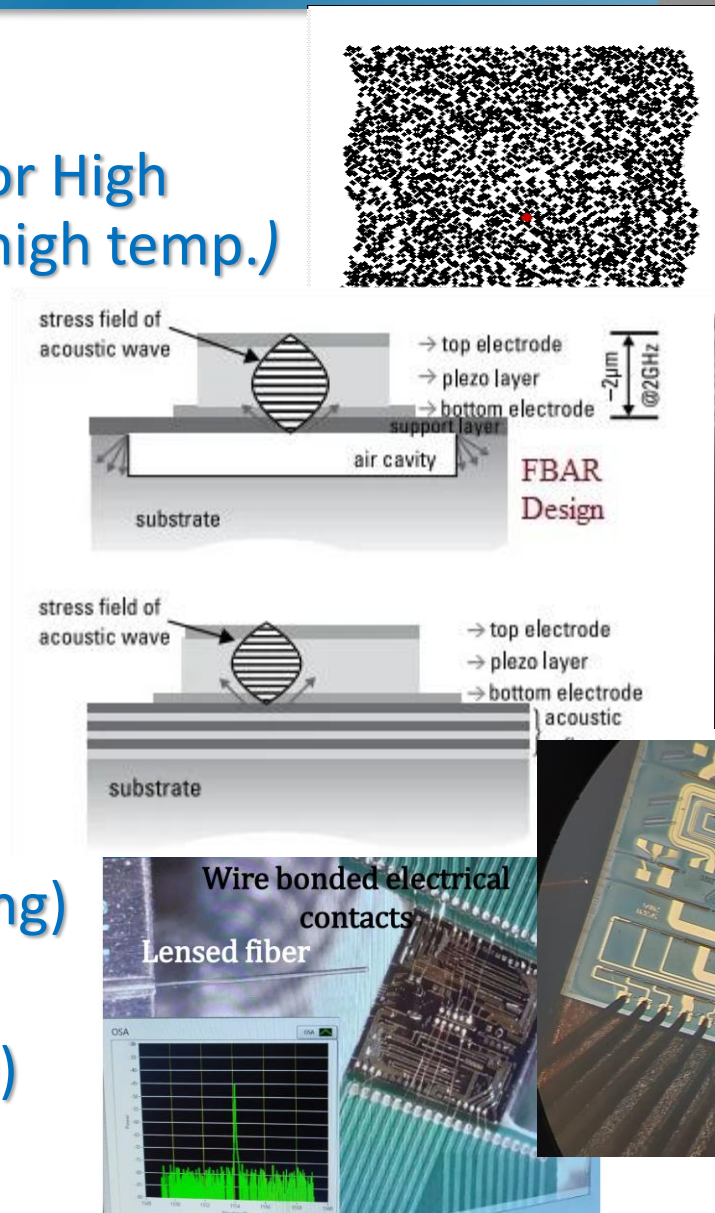
- General:
 - Phase and display devices
 - Application specific electronic drivers
 - Active and passive organic waveguides (incl. PICs)
 - Tunable microwave applications
- Present:
 - Tunable lenses
 - Beam steering
 - Intelligent reflective surfaces for microwaves
 - Reflect array for microwaves



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- General:
 - MEMS: Bulk and surface resonators for High Frequency filtering and sensing (e.g. high temp.)
 - LIDAR sensing
 - Photonic integrated circuits with active elements
- Present:
 - Air quality sensors using BAW
 - Optical frequency combs for LIDAR
 - PICs for LIDAR (gas sensing and ranging)
 - PICs for microwave photonics
 - PICs for transceivers (guided and FSO)



- **Smart Heater (ESA 2020)**
 - Intelligent heating system for low to medium priced decentralized heating
- **Enhance 5G (P/N 2017)**
 - Development of directional millimeter and microwave antennas for terrestrial and space applications
- **Attract-IALL/ALL (EU 2022/2017) & Programmable Optical element (ESA 2010)...**
 - Development adaptive lens, with potential applications in FSO
 - Development of optical beam steerer
- **Brightspace (EU 2012)**
 - Development of high-power laser (MOPA) for atmospheric (CO₂) studies using LIDAR
- **PIC-CO2/LIDERA/COMBINA/RANGER/ALAS (PN 2023/2020.....)**
 - Laser and PIC technology linked to LIDAR for ranging and sensing
- **Various ESA-ITTs: state of the art of technologies for Space applications (optical modulators, amplifiers, optical switches, transceivers....)**