



# June, 18th 2021

## 10:30 a.m.

Cloister Room - Faculty of Civil and Industrial Engineering - via Eudossiana 18

## Nanotechnology @ Sensors and Devices centre of Fondazione Bruno Kessler (FBK)

### Prof. Gianluigi CASSE

Fondazione Bruno Kessler (FBK)

<https://www.fbk.eu/en/>

#### Abstract

Nanotechnology is an extremely lively research area and a key enabler for an exceptionally wide range of industrial applications. The two worlds of research and industry both benefit from close interconnection and overlapping interests and activities. This is increasingly happening but the effectiveness of cross contamination is particularly enhanced by institutions specifically committed to both research and industrial activities. I do not mean internal research laboratories of (big) companies, but laboratories with access open to research and industrial actors, being a key part of a ecosystem involving education, research, small and big firms. A number of conditions have to be optimised: funding model, IP management, openness and/or confidentiality. And, most important, fundamental know-how and state-of-the-art equipment. In this talk I will describe the operation of the Sensors and Devices centre of Fondazione Bruno Kessler (FBK) in Trento, which is a unique laboratory where this approach is implemented in Italy. I will describe the research directions, internal and collaborative, the rationale for recent investments and the long term view, and finish with the experience gained with industrial partners to substantiate the claim regarding the importance of this type of laboratories.



Since 2016, Prof. Gianluigi Casse is Director of the Sensors and Devices centre of Fondazione Bruno Kessler (FBK) in Trento. FBK is the top research foundation in Italy, ranked 1st for scientific excellence in 3 different thematic areas and for the economic and social impact according to the results of the latest ANVUR evaluation on research quality. Gianluigi Casse is an experimental physicist with deep experience in the field of instrumentation for large particle physics experiments. He worked at CERN and at the University of Liverpool where he is full professor of experimental physics and was for several years head of R&D of the High Energy Physics group. He is a member of the LHCb experiment at CERN, for which he gave a substantial contribution to the conception, design, production and implementation of the central detection system of the experiment (VELO, Vertex Locator). He contributed to the design of the ATLAS experiment tracer and the upgrades currently underway. He leads (as co-spokesperson) the RD50 experiment (Radiation hard semiconductor devices for very high luminosity colliders) at CERN, which involves over 400 researchers from over 60 different international institutes to study new sensors capable of withstanding the prohibitive radiation conditions expected for future physics experiments and extreme applications. As director of the S&D centre, his main current interests are in research and innovation, along with their promotion, in nanotechnology, with particular reference to applications in sensor, imaging and quantum technologies.

#### Sensors and Devices centre of Fondazione Bruno Kessler (FBK)

operates on nanotechnology-based manufacturing platforms. The centre is located in a crucial position in the technology chain as it operates both in support of research and in the engineering and production of devices.



Prof. Gianluigi Casse will briefly introduce the various technological platforms of FBK facilities and their relevance to research and industry. He will also mention an important example both for the dynamism of the research and for the opportunities represented by an industry still in its first stages but with very accelerated growth prospects: quantum sciences and technologies.

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