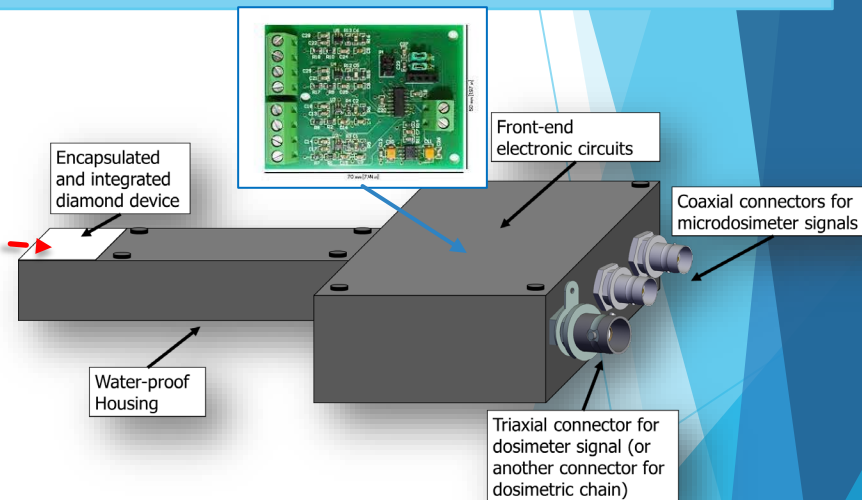
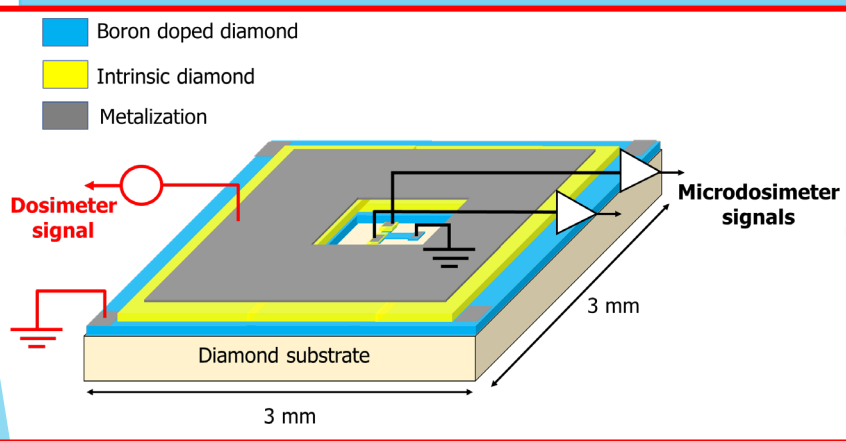


DIODE

"Diamond Integrated devices for hadrontherapy"

Project duration: 3 years (2022 – 2024)

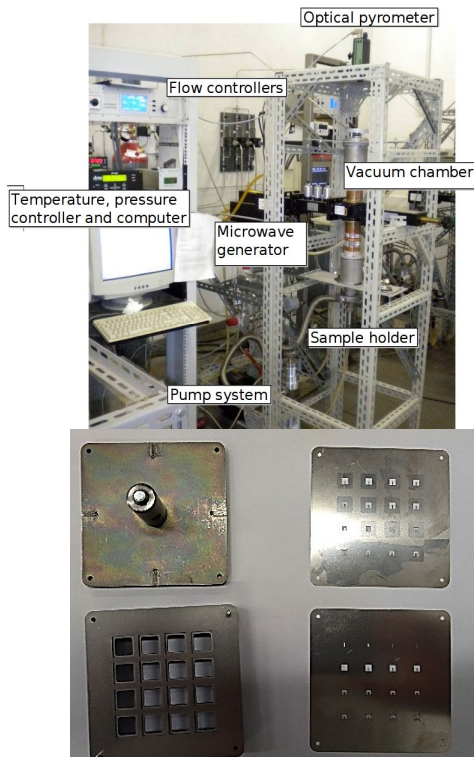
The aim of the proposed project is the development and characterization of a novel detection system based on synthetic single crystal diamond able to simultaneously perform dosimetric (current integration measure) and microdosimetric (single particle energy deposition measure) characterization of clinical hadron beams.



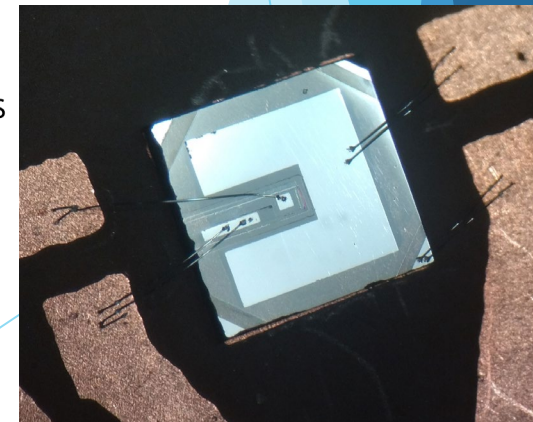
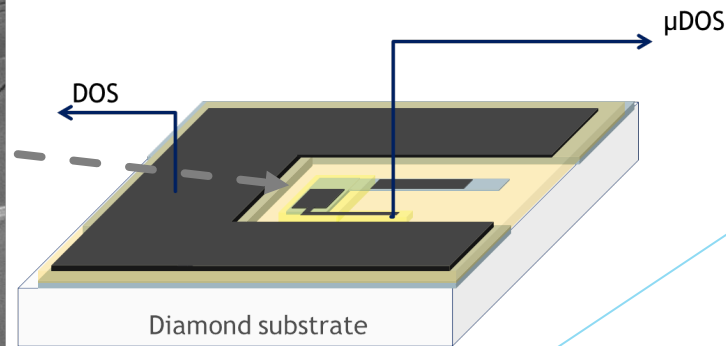
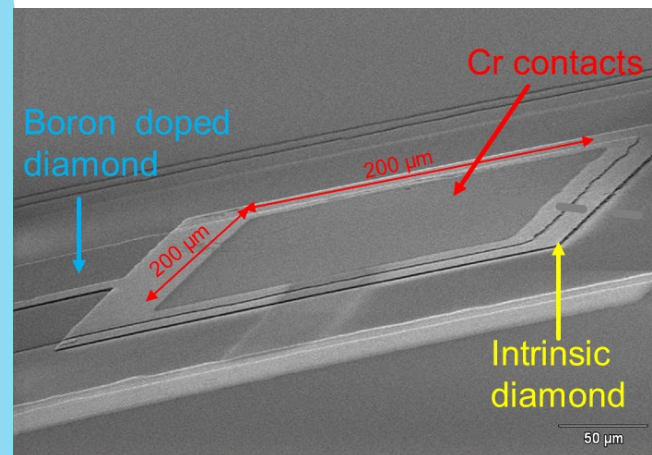
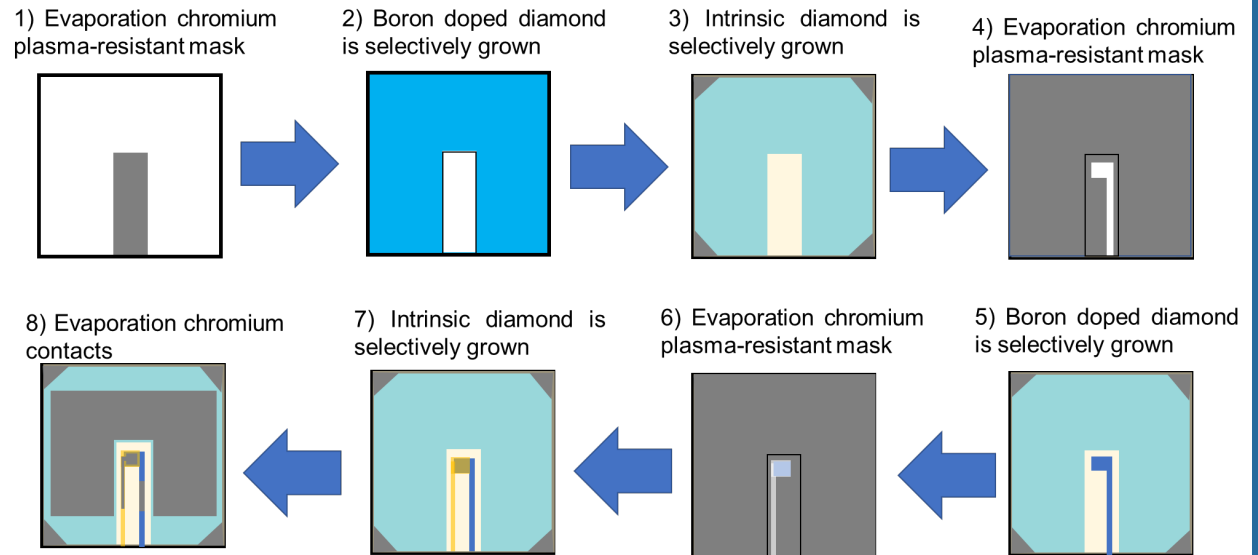
- INFN-Roma2** Resp: **C. Verona**
- INFN-Milano** Resp: **A. Fazzi**
- INFN-Roma3** Resp: **A. Fabbri**
- INFN-LNS** Resp: **G. Petringa**
- INFN-LNL** Resp: **V. Conte**

People	Qualification	FTE
Claudio Verona	Prof. Associato	70
Gianluca Verona Rinati	Prof. Associato	40
Marco Marinelli	Prof. Ordinario	30
Enrico Milani	Prof. Ordinario	30
Silvia Palomba	Dottoranda	50

DIODE - activity 0 - 6 M



Dos- μ Dos fabrication process



Milestones and deliverable in 2023

Milestones & Deliverable	Description	Mounth
D.3	Dosimetry and microdosimetry electronic circuits.	17 M
D.4	Availability of prototype	21 M
M.3	Test of prototype with protons at TIFPA.	24 M
D.5	Simulation of the beam line adopted for the experimental tests. The application will be included the LET calculation also	24 M

Budget for 2023

CONSUMO

Realizzazione di una maschera fotolitografica in quarzo da 4" con risoluzione ≤ 1 um contenente i layout dei dispositivi finali del progetto.	1 k€
4 substrati di diamante HPHT (213€ l'uno) da utilizzare per la deposizione CVD dei film di diamante	1 k€
Realizzazione e assemblaggio del prototipo dosimetro/microdosimetro con relativa elettronica.	2 k€

MISSIONI

Missione per 2 persone per misure sperimentale presso Trento Proton Therapy Centre (TIFPA) per la caratterizzazione preliminare del prototipo sviluppato con protoni da 70-240 MeV. Tre diverse campagne di misura di 4 giorni ciascuna	3 k€ (SJ)
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