

Intraoperative probe for radioguided surgery with beta- decays in brain tumor resection

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The radio-guided surgery (RGS) represents a very useful surgical adjunct to intraoperatively detect millimetric tumor residues, enabling a radical resection. The main innovation of the RGS exploiting beta- emitters is the lower target-to-background ratio compared to the established technique using gamma or beta+ radiation, that allows the extension of the RGS to further clinical cases. For feasibility studies on brain tumors we developed and tested prototypes of an intraoperative probe detecting beta- decays, the device core being a scintillator with high light yield, non-hygroscopic property and low density. Portable readout electronics with wireless data transfer to the PC has been customized to match the surgeon needs. Preclinical tests with dedicated phantoms and test on *ex-vivo* specimen showed very promising results for the RGS application on brain tumors. This presentation will discuss the innovative aspects of the method, the status of the intraoperative probe development, the preclinical tests and the first tests on *ex-vivo* specimen of patients affected by meningiomas.

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