

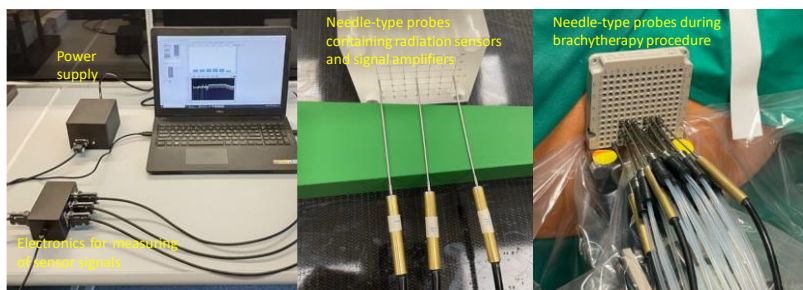
System and method for brachytherapy procedure planning and verification

BRIEF DESCRIPTION OF THE INVENTION

Brachytherapy is a radiation delivery based cancer treatment method, when the radiation source is placed inside or next to the malignant tumor. The advancements of computational calculation and precise treatment realization techniques allow accurate dose delivery within millimeter size dose margins, ensuring that only cancerous tissues will be destroyed. However, today there is no possibility to verify realisation compliance to the plan during the procedure, therefore even small deviations from carefully calculated dose distribution may result in incomplete cancer destruction or increased side effects. To avoid this, slightly higher doses are allowed to pass into healthy tissues.

Our developed technology and instrumentation are devoted for the real-time dosimetry during the brachytherapy procedure, as well as for treatment plan verification before the procedure.

Real-time monitoring of 3D distribution of deposited dose within tissues allows to perform adaptive brachytherapy and instantaneously modify the treatment procedure in case any deviations of the delivered dose from the planned one is observed. This allows strict dose prescription ensuring adequate cancer control and healthy tissue sparing.



PROPOSAL

The proposed method and apparatus are based on triangulation of reusable needle-type probes fixed within time-space resolved coordinates.

- We offer the technology and instrumentation for adaptive brachytherapy, real-time in vivo monitoring of 3D distribution of deposited dose.
- The system is compatible with most of the commercial brachytherapy instruments.
- The system has been tested at National Cancer Institute (Vilnius).

TECHNOLOGY READINESS LEVEL



Clinical trials in process

INTELLECTUAL PROPERTY

Patent granted: EP 4186562 B ([link](#))

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BENEFITS

- Specificity: during brachytherapy, high doses of radiation therapy can be administered directly to the tumor, at the same time protecting healthy tissues and organs from the effect of ionizing radiation.
- Adaptive brachytherapy - real-time delivered dose monitoring and subsequent dose correction to perform safe and effective treatment.
- Shorter treatment time: compared to external beam radiotherapy, brachytherapy procedures has the potential to deliver an ablative radiation dose over a short period of time.
- Possibility to verify treatment plan prior to procedure
- Compatibility: the system is compatible with most of the brachytherapy instruments.

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