



JAGIELLONIAN UNIVERSITY  
IN KRAKÓW

# INNOVATIVE SCINTILLATORS FOR MEDICAL DIAGNOSTICS

P-225, P-403

**The subject of the offer** is technology of vinyl monomers block polymerization in a specialized reactor to produce polymer scintillators.

**Application:** as main part of scanners used for computer tomography (CT), positron emission tomography (PET) and single-photon emission computed tomography (SPECT).



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Scintillators are chemical substances whose particles, when subjected to effects of ionising radiation, reach an excited state or undergo ionisation, and their return to the basic state results in the emission of photons with specific wavelengths. They are main part of scanners used in tomography technologies, but presently, annihilation gamma quanta are measured by scintillators built from expensive, inorganic crystals.

  
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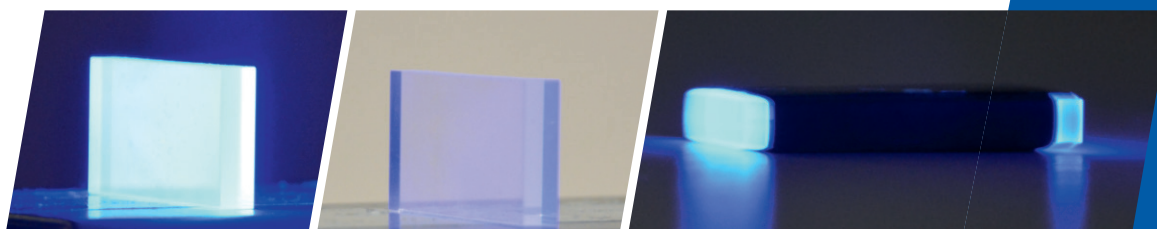
Thus significant costs reduction of the CT scanner by replacing expensive inorganic scintillators with cheap polymer ones is an important problem in cancer diagnostics and monitoring of anticancer therapy.

Polymer scintillators are produced by dissolving scintillating additions in refined liquid monomer and by initiating polymerization reaction, but to conduct the process safely and to obtain a homogeneous polymer product it is necessary to design a specialized reactor.

**Offered IP relates to:**

- ✓ technology of quite simple and inexpensive synthesis of polymeric scintillators whose scintillating features are similar to characteristics of available wavelength shifters. This technology is patented in the area of Poland (patent no. PL 227854, granted 7/09/2017), EPO and USA;
- ✓ technology of construction of the reactor which enables obtaining a homogeneous polymer in a form of long strips or plates without optical heterogeneities. This technology is subject to a patent application in the area of Poland and abroad (with priority date 28/04/2018).

Further development of the invention is under progress at Jagiellonian University.



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