

P41 | **Cardiac myxoma studies with Positron Annihilation Lifetime Spectroscopy**

E. Kubicz<sup>1,\*</sup>, G. Grudzień<sup>2,3</sup> on behalf of the J-PET collaboration

<sup>1</sup>*Institute of Physics, Jagiellonian University, Kraków*

<sup>2</sup>*Department of Cardiovascular Surgery and Transplantology, Collegium Medicum,  
Jagiellonian University, Krakow*

<sup>3</sup>*John Paul II Specialist Hospital, Krakow*

\*email: ewelina.kubicz@doctoral.uj.edu.pl

Positron Annihilation Lifetime Spectroscopy (PALS) allow to examine structure of materials at nano and sub-nanometer level. This technique is based on the lifetime and production intensity of ortho-positronium atoms in free volumes of given structures. Mostly it has an application in studies of organic material, but it can also be used for studies and morphometric imaging as proposed in patent [1]. Some studies performed e.g. by group of Y. C. Jean [2-4], shows that morphology of cells is correlated with the PALS parameters.

Previous studies conducted by the J-PET collaboration of model micro-organisms, e.g. *Saccharomyces cerevisiae* both with dry and aqueous samples allowed to determine the correlation between hygroscopicity of the cell and PALS parameters [5-6]. This experiment proved that PALS can be successfully used for studies of living organisms their dynamics and its relation to the cells morphology.

In this poster preliminary results of studies with Cardiac Myxoma tumor will be presented. This study is a first step on a way to develop imaging of positronium properties produced in the human body during the PET examination. For this aim J-PET group develop detector [8-10] and dedicated reconstruction methods [11-12].

[1] P. Moskal et al, Patent Application No.: P 405185, PCT/EP2014/068374

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[6] E. Kubicz et al, *Nukleonika* 60, 749 (2015)

[8] P. Moskal, N. Zoń et. al, *Nucl. Instr. and Meth. A* 775, 54 – 62 (2015)

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