Contribution ID: **18** Type: **talk**

Positron annihilation as a process to observe of the pathogenic tissue modification.

Sunday, 10 October 2021 09:00 (20 minutes)

Two the most known techniques based on positron-electron annihilation are PET (Positron Emission Tomography) and PALS (Positron Annihilation Lifetime Spectroscopy).
PET is a diagnostic method enabling imaging of the metabolism of chosen substances in the living organism. Metabolism rate depends on many factors, one of them is cancer growth in some region of body.
Other technique, commonly used in material sciences, PALS, allows following precisely kind of processes leading to positron annihilation, including creation and decaying the positronium (bound state of positron-electron) states. It is known that o-Ps lifetime value reflects size of the free spaces in which it is trapped. Then one can expect it can be used to investigate tissue modification during some kind of diseases. Additionally, intensity of this component allows to follow charge activity of some processes, including cell apoptosis or radical creation.
Preliminary investigation performed on real healthy and altered human tissues using PALS clearly indicates that it is possible to distinguish between healthy and diseased tissues and between different kinds of lesions of the some organ using techniques based on positron annihilation. So, it is justified to include the new imaging method based on positronium properties in PET diagnosis.

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Session Classification: Sunday Morning Session