

Scientific supervisor	
Name	Katarzyna Dziedzic-Kocurek
E-mail	k.dziedzic-kocurek@uj.edu.pl
Department	Medical Physics Department
Laboratory	Laboratory of Mössbauer Spectroscopy
Group webpage	http://www.zfm.if.uj.edu.pl/grupy-badawcze/pracownia-spektoskopii-mossbauerowskiej
Proposed research topic	
<i>Study of properties of organic materials and biological systems with a use of Mössbauer spectroscopy</i>	
<p>Mössbauer spectroscopy is a method based on the phenomenon of resonant absorption of gamma rays. It may provide unique information that describe local electronic states and dynamic properties at the atomic level, mainly iron isotope ^{57}Fe. In many cases such information results to be decisive for a final judge of a phase transition or electron transport within molecules, constituting whole organic material.</p> <p>Recently we have developed Mössbauer systems in our laboratory, providing measurements in a very broad temperature range (4.2 – 1000 K) and additionally in the environment of external magnetic field up to 9T.</p> <p>In July this year we are scheduling further test of those unique experimental stations. We plan to study human and bird erythrocytes and also food supplements and medicine that contain iron. Over the summer training, the students will have an opportunity not only to become acquainted with that exceptional and very precise experimental method itself that joins nuclear physics with condensed matter and biophysics but also to learn how to cope and work with nuclear sources, cryogenic equipment as well as superconducting magnets.</p>	
Main research tool	
Mössbauer spectrometer. Liquid helium/nitrogen cryostat. Superconducting magnet	
Additional requirements to the candidate	
<ul style="list-style-type: none"> - basic knowledge of physics at the level of advanced laboratory in Physics - broad interest in different of physics and its application 	
Possibility to continue student internship in the form of:	
Diploma thesis (master's or bachelor's degree)	X
PhD study	