

**Course title:** Basics of applied photochemistry I – ~~selectable~~ / regular course

**Number of contact hours:** 15 hours (15h of lectures)

**ETCS credits:** 1

**Course description:** Students will learn how the light interacts with matter and what photophysical and photochemical processes are involved in that interaction. Next, practical applications of the particular processes, such as light absorption, fluorescence, phosphorescence, intersystem crossing and radiationless decay of excited states, in various spectroscopic methods will be discussed. The most important photochemical reactions, their mechanism and applications in organic synthesis will be reviewed. To stimulate students towards innovative thinking, a history of photochemical imaging methods, their development and application in analog photography will also be presented. Finally, if the time allows, other subjects, such as applications of chemiluminescence or photochemical generation of reactive species will be presented.

**Education effects** (P6S\_WG, P6S\_UW, P7S\_WG):

- **knowledge:** student knows the basic processes involved in interaction of light with matter and their practical applications, knows principles and applications of optical spectroscopy techniques, and; knows the chemical reactions and processes involved in photoimaging technologies

- **skills:** student can perform critical analysis of existing chemical technologies and propose new innovative solutions or improvements to the existing technologies using his chemical knowledge augmented with applied photochemistry.

**Literature:** [1] M.Montalti, A.Credi, L.Prodi, M.T.Gandolfi. "Handbook of Photochemistry", 3<sup>rd</sup> Ed., CRC Press Taylor & Francis Group 2006. [2] A.Griesbeck, M.Oelgemöller, F.Ghetti. "CRC Handbook of Organic Photochemistry and Photobiology.", 3<sup>rd</sup> Ed. CRC Press Taylor & Francis Group 2012. [3] Eastman Kodak – „Encyclopedia of Practical Photography.”

**Assessment method:** Final test

**Prerequisites:** Basic knowledge of chemistry at the first level (engineering) studies.

**Primary target group:** All specialties of chemistry, chemical engineering and technology

**Lecturer:** dr hab. inż. Roman Popielarz, prof. PK

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