



“An Introduction to Bioorganic Chemistry”.

lecturer: Dariusz Witt (GUT); 15 h

The purpose of this lecture is to provide the basis for a deeper understanding of the structures of organic compounds and their applications based on the selected examples. The level is aimed at graduate and beginning PhD students. Our goals are to solidify the student's understanding of basic concepts provided by an introduction to bioorganic chemistry and to present more information and detail, including quantitative information, that can be presented in the first course in organic chemistry.

The following lecture aims to give an insight into the organophosphorus chemistry, modern industrial synthesis, supramolecular chemistry and nanotechnology. We believe that these topics can provide a level of preparation which will permit the student to assimilate and apply the primary and review literature of organic chemistry.

Over the last decade, self-assembled monolayers (SAMs) of thiols and disulfides on gold (and, to a lesser degree on Ag, Pt, Cu, Pd, Hg) have emerged as one of the most important classes of surface coatings. In particular, alkyl thiols (ATs) and disulfides (ADs) are widely used to prepare highly ordered monolayers whose properties can be adjusted by changing the chemical nature of the terminal groups. SAMs of alkyl thiols and disulfides are used in modern micro- and nano-fabrication, in biomaterials and biological assays, in molecular electronics, in analytical and sensory applications, and as molecular lubricants, protective coatings, or templates for crystal nucleation and growth. From this point of view it is recommended to take a look at the most recent applications in nanotechnology based on SAMs.

I hope that this lecture will continue to serve students in fostering an understanding of advanced organic chemistry.

Dariusz Witt



An Introduction to Bioorganic Chemistry – Lecture Schedule

	Topics	
1.	Chemical Bonding and structure Acid and Bases, nucleophiles and electrophiles Stereochemical Principles	4h
2.	Viagra – industrial synthesis Building chemistry (selected examples) Polymers (selected examples)	4h
3.	DNA and its synthesis Biopolymers – polypeptides and their synthesis Supramolecular chemistry – calix[4]arenes synthesis and application	4h
4.	Self-Assembled Monolayers (SAMs) AuNP- gold nanoparticles- preparations and selected applications MOFs, nanotubes and fullerenes – selected examples	3h

Literature:

1. J. March, Advanced Organic Chemistry
2. J.D. Roberts and M.C. Caserio, Organic Chemistry
3. F.A. Carey and R.J. Sundberg, Advanced Organic Chemistry

TERMINY WYKŁADÓW			
Data	Dzień tygodnia	Godzina	Sala
19.11.2010	Piątek	15-18	360GG
26.11.2010	Piątek	15-18	360GG
03.12.2010	Piątek	15-18	360GG
09.12.2010	Czwartek	15-18	360GG
10.12.2010	Piątek	15-18	360GG