

## CHEMICAL KINETICS

B.Nagy Ottó D.Sc.

Retired Professor. Former Head of the Physical Organic Chemistry Laboratory.  
Université Catholique de Louvain(UCL), Louvain-la-Neuve, Belgium.

Time-dependent phenomena play an essential role in chemistry, biochemistry and medicine. Chemical kinetics represents a scientific approach that allows to discover the laws governing these phenomena and to understand thereby their internal mechanism. The aim of this lecture-course is to give an introduction at a fairly advanced level to the theoretical foundations and practical applications of modern kinetic methods. The presentation will be sufficiently detailed providing working knowledge for applications in various fields of science. The main topics are the following:

1. Introduction and basic definitions.
2. Formal deterministic kinetics (irreversible, reversible reactions, autocatalysis).
3. Kinetics and non-equilibrium thermodynamics(steady state, coupled reactions, Onsager and Prigogine laws, microscopic reversibility,oscillating reactions, chaos).
4. Reaction rate theories (mainly transition state theory, potential hypersurfaces).
5. Reaction mechanisms (acid-base and enzymatic catalysis, free energy relationships, Brönstedt and Hammett equations, perturbation theory of substituent effects,PEBIHA principle,Curtin-Hammett relationship,isotope effect,symmetry rules, electron transfer, Marcus theory).
6. Reactivity theories (SHAB, frontier orbital theory, Fukui indices, Klopman-Salem equation, Marcus approach).
7. Fractal kinetics.
- 8.Diffusion controlled reactions (3D, 2D, steady and non-steady state).

**WYKŁADY:**

<b>Termin</b>	<b>Dzień tygodnia</b>	<b>Godzina</b>	<b>Miejsce</b>
18.03.2019	poniedziałek	9.15 – 12.00	Minicentrum Konferencyjne (Luwr)
19.03.2019	wtorek	9.15 – 12.00	Minicentrum Konferencyjne (Luwr)
20.03.2019	środa	9.15 – 12.00	Minicentrum Konferencyjne (Luwr)
21.03.2019	czwartek	9.15 – 12.00	Minicentrum Konferencyjne (Luwr)
22.03.2019	piątek	9.15 – 12.00	Minicentrum Konferencyjne (Luwr)

**SEMINARIA:**

<b>Termin</b>	<b>Dzień tygodnia</b>	<b>Godzina</b>	<b>Miejsce</b>
25.03.2019	poniedziałek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
26.03.2019	wtorek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
27.03.2019	środa	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
28.03.2019	czwartek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
29.03.2019	piątek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)