UNIVERSIDADE ESTADUAL DE CAMPINAS
INSTITUTO DE QUÍMICA

PROGRAMS AND BIBLIOGRAPHY

Subject	
Code	**Name**
QO853	Introduction to Supramolecular Chemistry and Supramolecular Catalysis

Vector
OF:S-5 T:002 P:000 L:000 O:000 D:000 HS:002 SL:002 C:002 AV:N EX:S FM:75%

Pre requirement	QO321 *QO521

Summary

Basic concepts of Supramolecular Chemistry. Self-assembly, self-sorting and self-organization. Synthesis of supramolecular building blocks. Introduction to Supramolecular Catalysis focusing on usual organic chemistry reactions (hydrolysis, aldol reactions, Diels-Alder reaction and others).

Program

1. Understanding the concept of “Chemistry beyond the molecule” and the paramount importance of noncovalent interactions in supramolecular structures. Van der Walls interactions, hydrogen bonding, aromatic interactionsπ–π, interactionsπ–cations. Donor-acceptor interactions, metal-ligand, dynamic covalent bonds.
2. Self-assembly, self-sorting and self-organization.
3. Entropy and supra-structures:Hydrophobic effect, pre-organization, flexibility, multiple recognizement.
4. Supramolecular building blocks: crown ethers, cyclodextrins, calixarenes, metaloporphyrines, cucubituriles, oligopyridines and others.
5. Supramolecular nanoreactors and organic reactions: Diels-Alder cycloaddition, aldol reactions, hydrolysis, terpene cyclization and photo oxidations.

Bibliography

1. J. W. Steed and J. L. Atwood, Supramolecular Chemistry, 2nd Edition, Wiley UK, 2009.
2. U. H. Brinker and J. –L. Mieusset (Eds), Molecular Encapsulation – Organic Reactions in Constrained Systems, Wiley UK, 2010.

Evaluation criteria

For grading policy, see: Regimento Geral de Graduação, Seção I – Normas Gerais, Capítulo V – Da Avaliação do Aluno na Disciplina. Students are required to attend 75 % of the lectures. For further details, see: Regimento Geral de Graduação, capítulo VI, seção X, artigo 72.