Code: **QI544**

Name: **Química Inorgânica Experimental II**

Name in English: **Inorganic Chemistry Laboratory II**

Name in Spanish: **Química Inorgánica Experimental II**

Subject type: **Weekly**

Approval type: **Grade and frequency**

Characteristic: **Regular**

Frequency: **75%**

Period Type / Offering period: **Semestral / 1st Period – odd periods**

Requires Final Exam: **Yes**

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
-	**4**	**-**	**1**	**-**	**-**	**4**	**15**	**5**

Occurrence on curriculum: **05**

Pre requirement: ***QG564 or *QI545**

Summary:

Synthesis, characterization and applications of inorganic compounds, especially d and f transition metals coordination and organometallic complexes. Oxide and sulphide bioinorganic complexes. Kinectics of ligand substitutions reactions on coordination complexes. Intercalations reactions. Homogeneous and heterogeneous catalysis

Program:

Preparation and characterization of coordination complexes from d and f-blocks ions and bioinorganic model compounds.

Preparation of extended inorganic solids and size effect on solid properties

Surfaces modifications of solids

Characterization of the synthesized compounds, exploring several techniques and properties such as powder X-rays diffraction, electronic spectroscopies, circular dichroism, vibrational spectroscopies, nuclear magnetic resonance, electrochemical and luminescence spectroscopy

Application of inorganic compounds in: catalysis, photocatalysis, energy conversion, magnetism, sensors, electrochemistry, optics, among others.

Basic Bibliography

1) BORGO, C. A.; LAZARIN, A. M.; DAVANZO, C. U.; GUSHIKEM, Y. **Preparação e Caracterização do Complexo Cobaloxima e Sua Utilização na Construção de um Eletrodo Modificado. Um Experimento Eletroquímico no Curso de Graduação.** Química Nova, vol. 26, n.6, p. 943-947, 2003.

2) VRUBEL, H.; HASEGAWA, T.; E. DE OLIVEIRA, E.; NUNES, F. S. **A new facile high yield preparative route for mixed-trinuclear acetate clusters**. **Inorganic Chemistry Communications**, vol. 9, n. 2, p.208-211, 2006.

3) TASIĆ, L. **Química em 50 Ensaios** – Campinas-SP: Editora Átomo 2017, p. 134-148; 201-218; 270-281; 297-304

Supplementary Bibliography

1) BROWN, T. M.; COOKSEY, C. J.; CRICH, D.; **Cobaloximes as vehicles for college teaching. Journal of Chemical Education**, vol. 67, n. 11, p. 973-974, 1990
2) KELLER, S. W.; MALLOUK, T. E., **Experiments Illustrating Metal-Insulator Transitions in Solids. Journal of Chemical Education,** vol. 70, n. 10, p. 855-860, 1993
3) MACFARLAND D. K.; HARDIN, C. M.; LOWE M. J.; **A Phthalocyanine Synthesis Group Project for General Chemistry**. **Journal of Chemical Education,** vol. 77, n. 11, p. 1484-1485, 2000
4) GUSHIKEM, Y.; **Espectros eletrônicos de alguns complexos de geometria octaédrica de Ni2+: uma introdução prática à teoria do campo cristalino no curso de graduação**. Química Nova, Vol. 28, n. 1, p. 153-156, 2005
5) MELO JR., M.; SANTOS, L. S.; GONÇALVES, M. C.; NOGUEIRA, A.F**.; Preparação de nanopartículas de prata e ouro: um método simples para a introdução da nanociência em laboratório de ensino.** Química Nova, vol. 35, n.9, p. 1872-1878, 2012
6) Material bibliográfico selecionado pelo professor