UNIVERSIDADE ESTADUAL DE CAMPINAS
INSTITUTO DE QUÍMICA

PROGRAMS AND BIBLIOGRAPHY

Subject	
Code	**Name**
QI855	Luminescent Materials: Fundamentals and Applications

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	QI345

Summary

Excitation and emission, selection rules of electronic transitions, radiative and non-radiative energy return to the ground state, energy transfer mechanisms; downshifting, dowconversion and upcoversion processes and applications.

Program

Concepts and types of Luminescent Materials.
Understanding the concepts of excitation and emission spectra. Similarities and differences between excitation and absorption spectra;
Understating the spectroscopy and molecular terms;
Laport and spin selection rules;
Excitation, radiative (emission) and non-radiative processes;
Energy transfer mechanisms: intermolecular - Foster and Dexter mechanisms and intramolecular - exchange and dipole –dipole mechanisms;
Fundamentals on Radiative processes: downshifting, dowconversion and upcoversion and two photons absorption;
Biomedical and technological applications.

Bibliography

Textbooks

Huheey, J. E.; Keiter, E. A.; Keiter, R. L. Inorganic Chemistry: Principles of Structure and Reactivity. 4th ed. New York: Harper Collins, 1993.
Blasse, G., Grabmaier, B. C. Luminescent materials. Berlin: Springer-Verlag, 1994.
Lakovicks J. R., Principles of fluorescence spectroscopy, 3rd ed., New York: Springer, 1999.
Bünzli J.-C. G., Chopin, G. R. (Eds.), Lanthanide probes in life, chemical and earth sciences: theory and practice. Amsterdam; Elsevier, 1989.

Supplemental Readings

Articles selected by the professor.

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.