



**PROGRAMS AND BIBLIOGRAPHY**

<b>Subject</b>	
<b>Code</b>	<b>Name</b>
QI854	Magnetochemistry: Fundamentals and Applications of Molecular Materials.

<b>Vector</b>
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%

<b>Pre requirement</b>	QI345
------------------------	-------

<b>Summary</b>
Origins of the magnetic moment. Magnetic properties of free ions. Quenching of the orbital magnetic moment. Mechanisms of magnetic interactions. Properties of purely organic molecules and coordination compounds.

<b>Program</b>
Origins of magnetic moment, diamagnetism, paramagnetism, Curie Law and Curie-Weiss; - Paramagnetism and Crystalline Field: magnetic properties of free ions; Quenching of the orbital magnetic moment; coordination compounds; Jahn-Teller effect. - Mechanisms of interactions; low-dimensional magnetism (dimers and clusters); dimensional structures or chains; alternating chains; two-dimensional systems; - Order at long distance; ferromagnetism; antiferromagnetism; domain theory; magnetization curves; hysteresis curves. - Molecular magnets: purely organic; coordination compounds. - Experimental techniques: magnetometry and electronic paramagnetic resonance.

<b>Bibliography</b>
<b>Textbooks</b> A. Earnshaw, Introduction to Magnetochemistry, Academic Press, London, 1968. R. L. Carlin, Magnetochemistry, Springer-Verlag, New York, 1986. <b>Supplemental Readings</b> O. Kahn, Molecular Magnetism, Verlag-Chemie, New York, 1993. Articles selected by the professor.

<b>Evaluation criteria</b>
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.