

Course description

Course Title Symmetry in Chemistry Simetria em Química		
Type/Attendance Time Lecture: 2 hour per week Tutorial: 2 hours per week	Credit points (ECTS) 5	Type of Examination Examination, Exercises
Recommended Prerequisites [entrance requirements to be entered]		
Content 1. Group Theory Group concept, Cayley table, subgroup, conjugate elements, classification 2. Symmetry Groups of Molecules Symmetry operations, nomenclature (according to Schoenflies) 3. Representation Theory Matrix representation: reducible/irreducible character tables, reduction of representations Product representations and integral projection operators 4. Symmetry and the Electronic Schrödinger Equation Classification of molecular orbitals and electronic state functions, splitting of degenerate energy levels with symmetry reduction 5. Symmetry and Molecular Vibrations Normal modes of vibration, symmetric classification of normal modes 6. Symmetry and Spectroscopy Transition probability and selection rules Electronic spectra Vibrational spectra Vibronic spectra 7. More Applications of Symmetry in Chemistry Examples: coordination chemistry, chemical reactions		
Conteúdo 1. Teoria de Grupos; 2. Grupos de simetria de moléculas; 3. Teoria da representação; 4. Simetria e a equação eletrônica de Schrödinger; 5. Simetria e vibrações moleculares; 6. Simetria e espectroscopia; 7. Mais aplicações de simetria em química.		