

212047 – CHEMISTRY OF MATERIALS

CREDITS: 04 (four) – 60 hours/class

CONTENT:

Strategies for synthesis of materials. Polymeric materials. Semiconductors. Metals, alloys and bimetallic materials. Carbon-based materials. Zeolites and related structures (metal-organic frameworks: MOF); and porous materials (microporous and mesoporous). Optical and magnetic properties of materials. Nanomaterials. Main techniques of characterization of materials.

SYLLABUS:

1. Materials synthesis strategies
2. Polymeric materials.
3. Semiconductors.
4. Metals, alloys and bimetallic materials.
5. Carbon-based materials.
6. Zeolites and related structures (metal-organic frameworks: MOF); and porous materials (microporous and mesoporous).
7. Optical and magnetic properties of materials.
8. Nanomaterials.
9. Main techniques of materials characterization.

BIBLIOGRAPHY:

1. SMART, L.E.; MOORE, E.A. Solid State Chemistry: an introduction. 4.ed. CRC Press, 2012.
2. FAHLMAN, B.D. Materials Chemistry. 2.ed. Springer, 2011.
3. KITTEL, C. Introdução à física do estado sólido. 8.ed. LTC, 2006.
4. CALLISTER Jr., W.D.; Rethwisch, D.G. Ciência e Engenharia de Materiais: uma introdução. 9.ed. LTC, 2016.
5. Current scientific articles of materials science research.