

POSMAT I Programa de Pós-graduação em Engenharia de Materiais



Course: Structure and Processing of Ceramics

Code: MEM.018

Credits: 03

Module: Specific formation

Research area: Selection, processing e characterization

Content:

Crystalline structure of ceramics. Imperfections in ceramics crystals. Conventional and advanced ceramic products. Common and special raw materials for advanced ceramics. Processing of particulate ceramic materials (colloids, powders and granules). Physics and chemistry of interfaces. Processing additives. Plastic forming, pressing, extrusion and injection molding processes. Particle packaging. Rheological properties. Slip casting. Special ceramic processing techniques. Advanced methods for the ceramic materials manufacture (sol-gel processing, chemical vapor deposition (CVD), physical vapor deposition (PVD), etc.). Drying. Sintering. Microstructure development. Techniques for microstructure characterization. Thermal and mechanical properties of ceramic materials. Development of new functions and applications.

References:

1. REED, J. S. **Principles of ceramic processing**. 2nd ed. New York: John Wiley & Sons, 1995.
2. KINGERY, W. D., BOWEN, H. K., UHLMAN, D. R. **Introduction to ceramics**. 2nd ed. New York: Wiley, 1976.
3. ADAMSON, A. W. **Physical chemistry of surfaces**. 5th ed. John Wiley & Sons, 1994.
4. CALLISTER, W. D. **Ciência e Engenharia de Materiais: Uma introdução**. 8 Ed. Rio de Janeiro: LTC, 2012.
5. Artigos Científicos