

Facultatea: Chimie Aplicata si Stiinta Materialelor

**CONTRIBUȚII LA STUDIUL UNOR BIOMATERIALE POLIMERICE:
SINTEZĂ, CARACTERIZARE
FIZICO-CHIMICĂ ȘI APLICAȚII**

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Contributiile originale ale acestei teze se refera la obtinerea unor noi tipuri de filme biopolimerice si la corelarea compozitiei, a structurii, a caracteristicilor de suprafata cu adeziunea, proliferarea si viabilitatea celulelor pe suprafata acestora. Au fost studiate doua tipuri de filme biopolimerice: binare - pe baza de alcool polivinilic (PVA) si hidrolizat de collagen nedopat si dopat cu oligoelemente - si ternare - pe baza de PVA, gel de collagen cu si fara hidroxiapatita (HAP) - . Oligoelementele sau hidroxiapatita prezente in filmele binare si ternare conduc la cresterea rugozitatii si a caracterului hidrofil al acestora, precum si la cresterea viabilitatii celulelor. Aceste rezultate arata ca hidrolizatul de collagen dopat cu oligoelemente poate fi utilizat in locul hidroxiapatitei in compozitia biofilmelor care sunt utilizate ca substrat pentru celule osteoblaste si ca substitut de os. De asemenea structura nanoporoasa a acestor filme permite utilizarea lor in ingineria tisulara in procesele biologice la nivel nano.

Faculty: Applied Chemistry and Materials Science

**Contributions at polymeric biomaterials study: synthesis,
physico-chemical characterization and applications**

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The original contributions of this thesys refers to obtaining of new biofilms and also to correlation between theirs composition, structure, surface characteristics and cells adhesion, proliferation and viability. Two types of biopolymeric films, like binary films with PVA and collagen hydrolysates undopped and doped with oligoelements, and ternary films with PVA, collagen gel and hydroxyapatite (HAP) were obtained and studied.

Oligoelements or hydroxyapatite presence in binary and ternary films composition lead to an increase in roughness and hydrophilic character and also to an increase in cells viability. These results indicate that collagen hydrolysates doped with oligoelements can be used as substitute of hydroxyapatite in biofilms composition which are used as substrate for osteoblaste cells and for bone substitute. Also, the nanoporous structure of the films allows the use of these composites in tissue engineering in biological process at nano level.