

# Compozite hibride organic - anorganic

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# Materiale sol-gel hibride



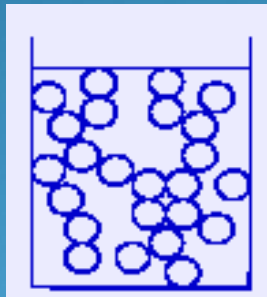
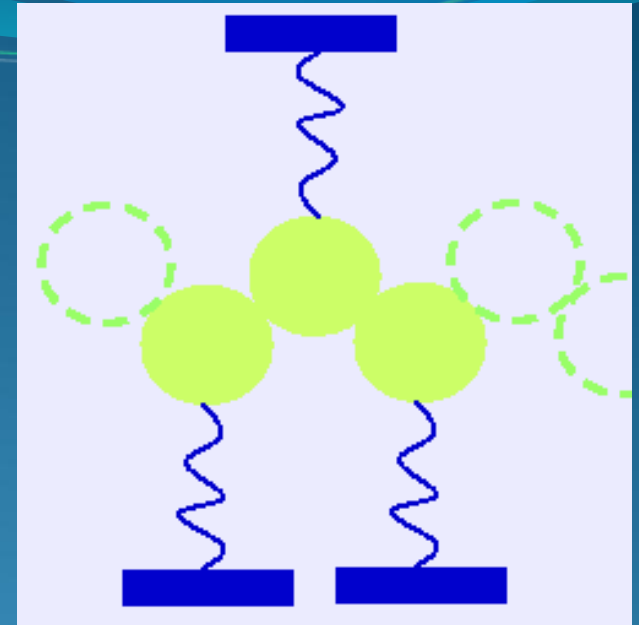
+ H<sub>2</sub>O

Catalizator



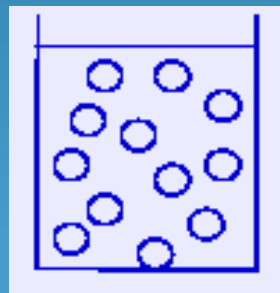
Policondensare

T°C ambienta



Gel

Structura solida 3D  
impregnata cu  
solvent



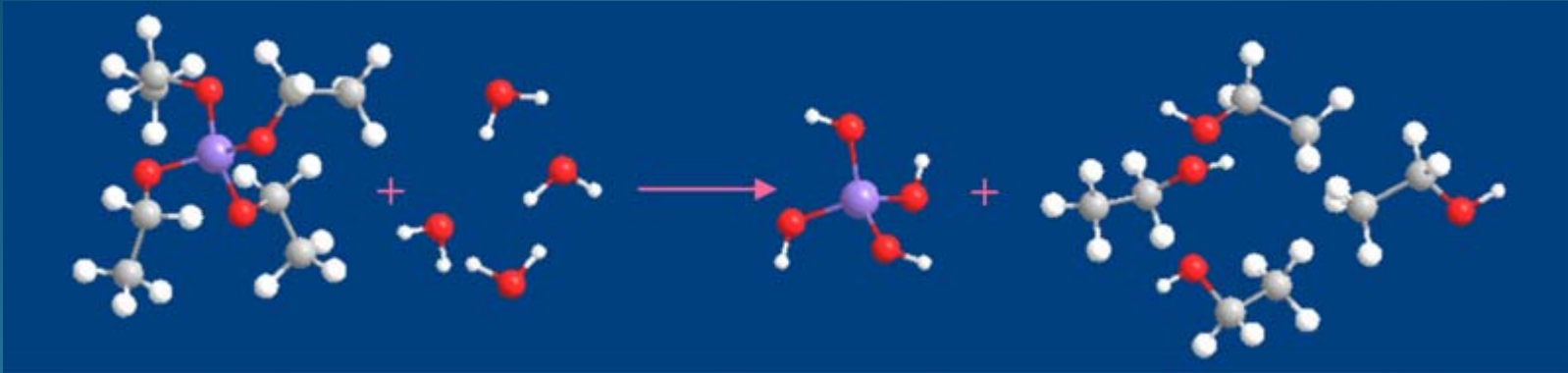
Sol

Particule solide  
dispersate intr-un  
solvent



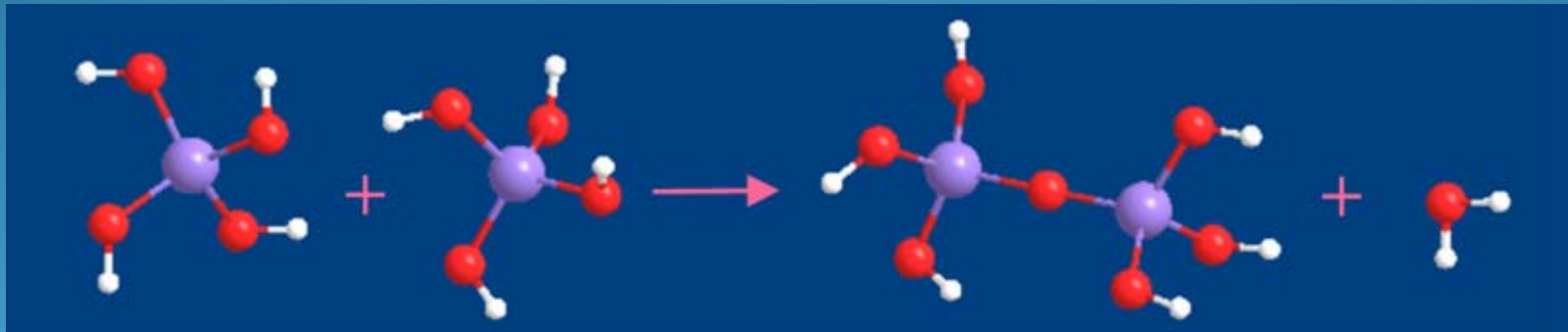
Temperatura ambienta

## Hidroliza

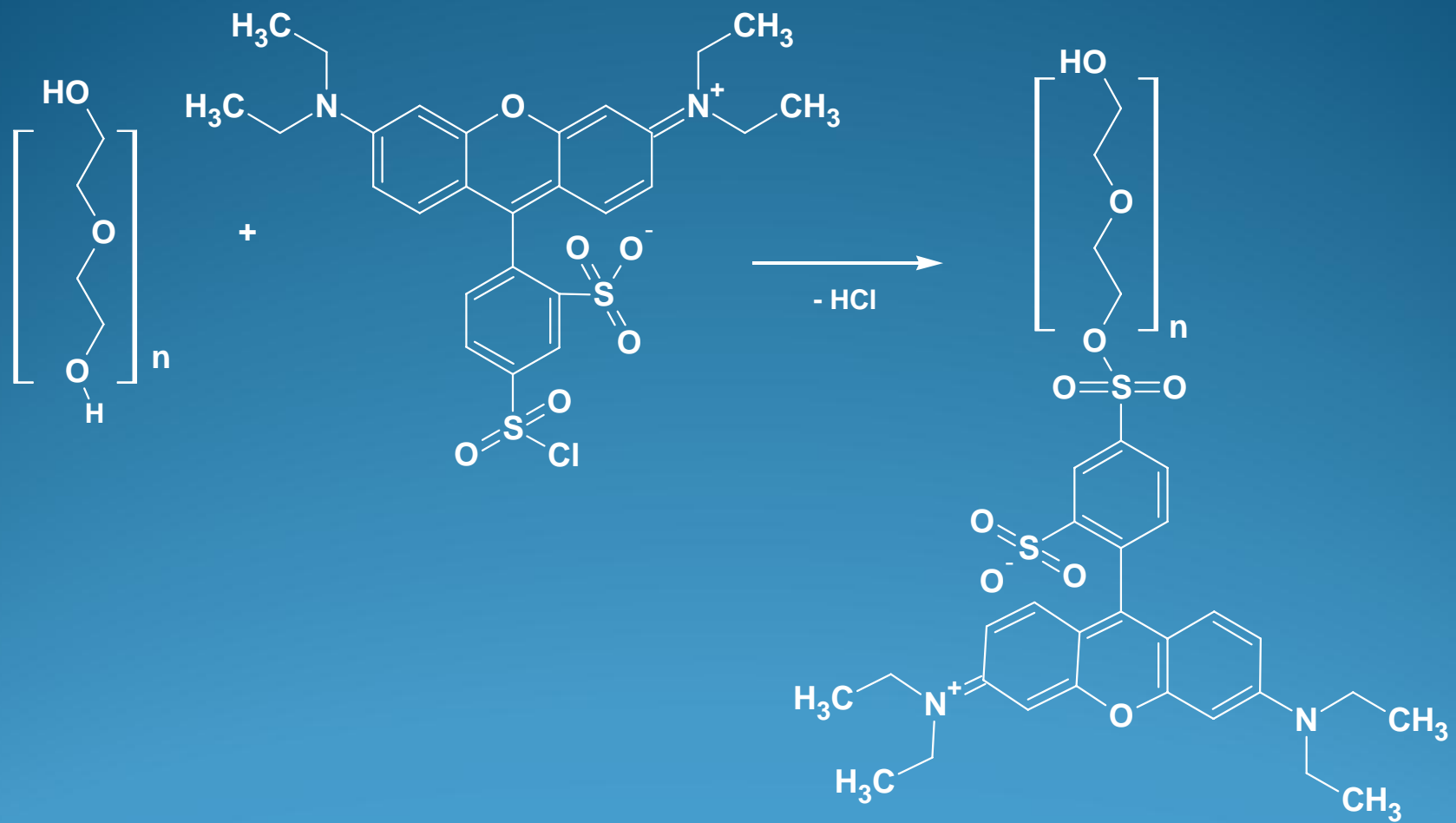


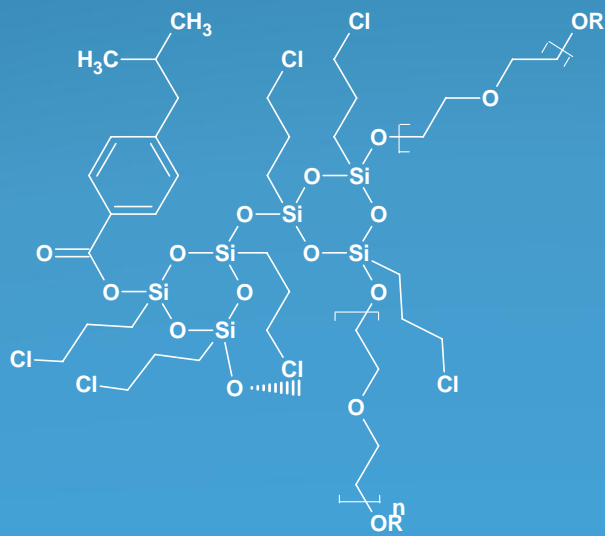
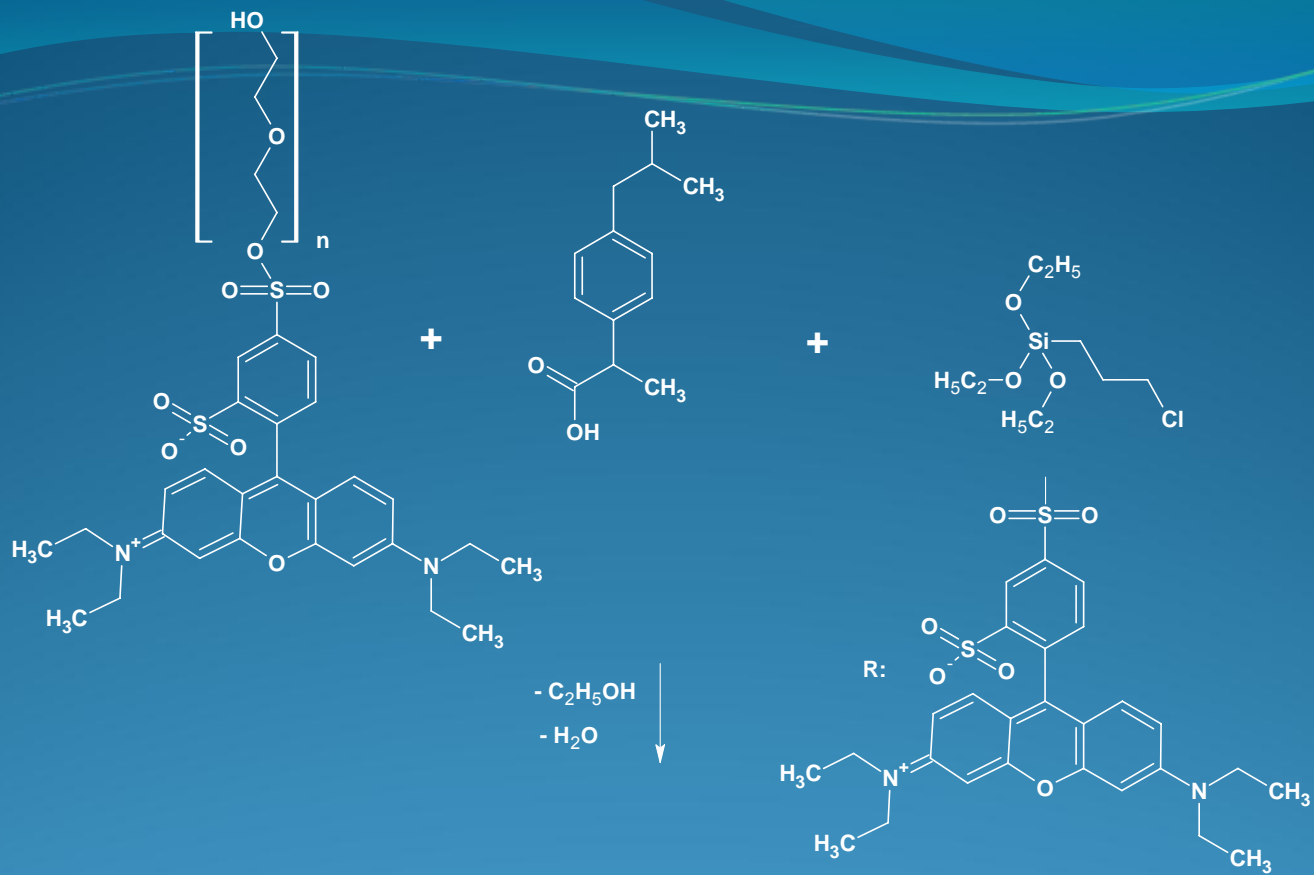
Schema reactiei de hidroliza pentru tetraetoxisilan

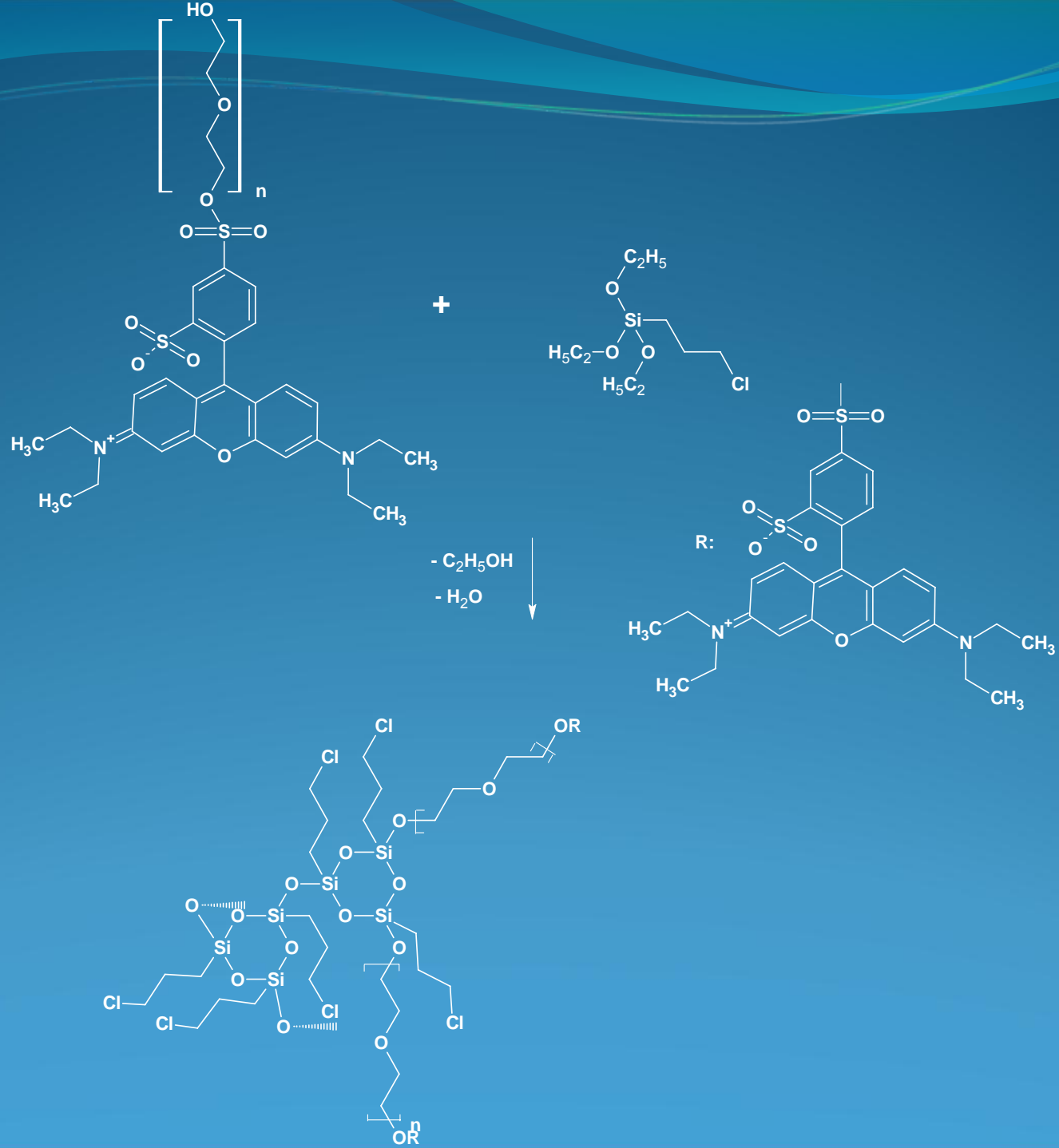
## Condensarea

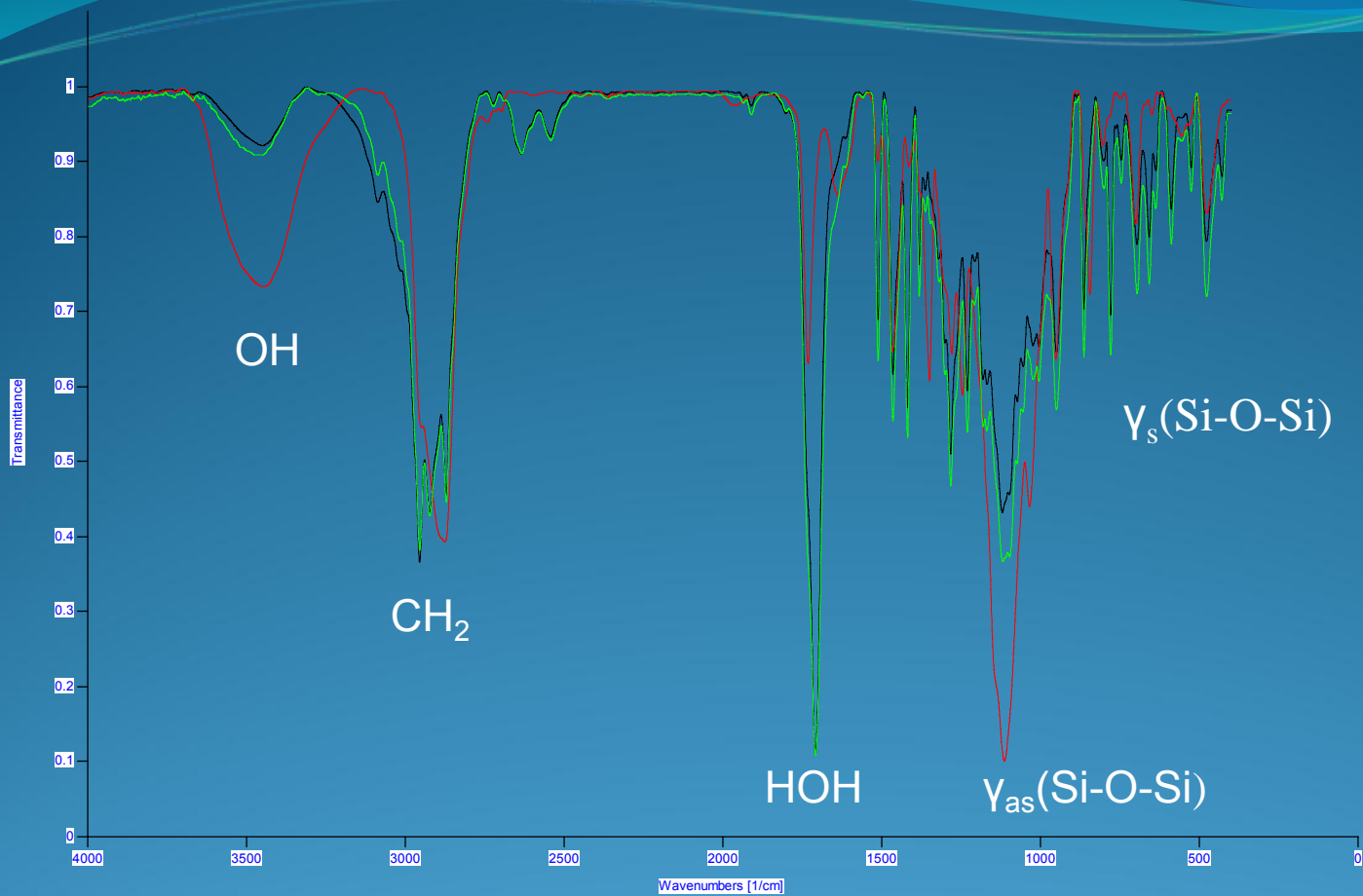


Schema reactiei de condensare a doua grupe silanol







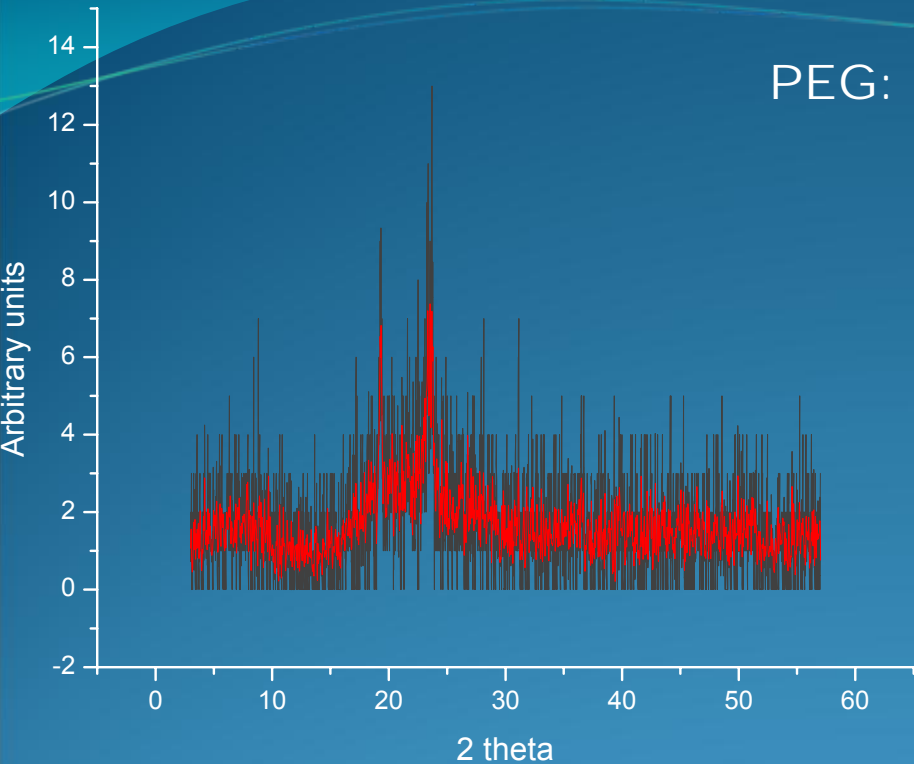


Spectrele FTIR pentru derivatii PEG modificati cu lisamina rodamina B (—) si compozitele cu (—) sau fara ibuprofen (—)

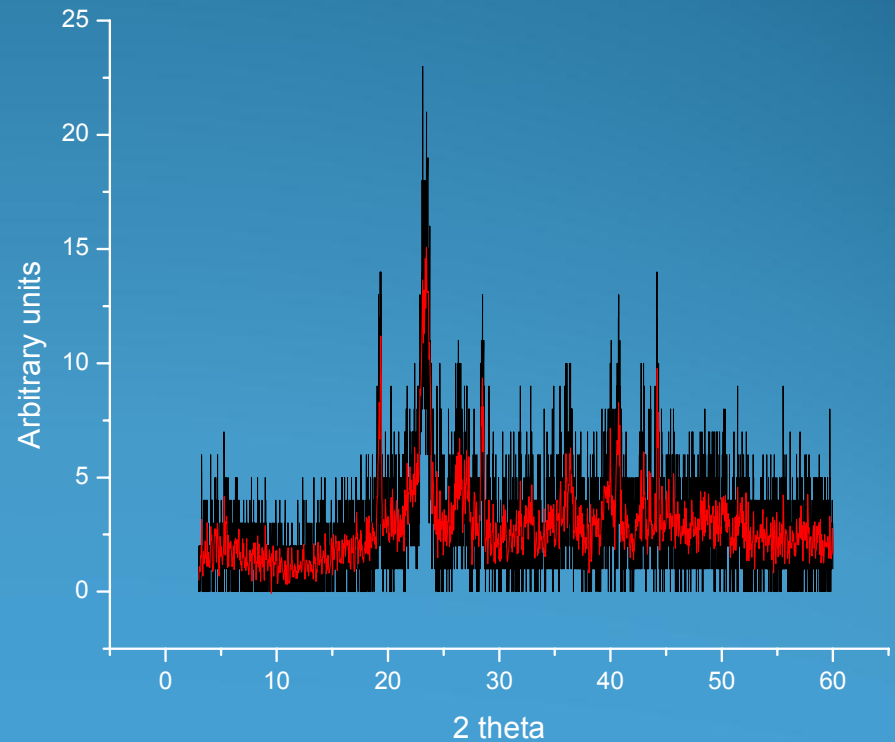
PEG: 18.74° si 22.86°

26.77°, 30.5°, 35.9° si 40°

Spectru de difractie X  
pentru produsul hibrid  
fara ibuprofen (pH~3)



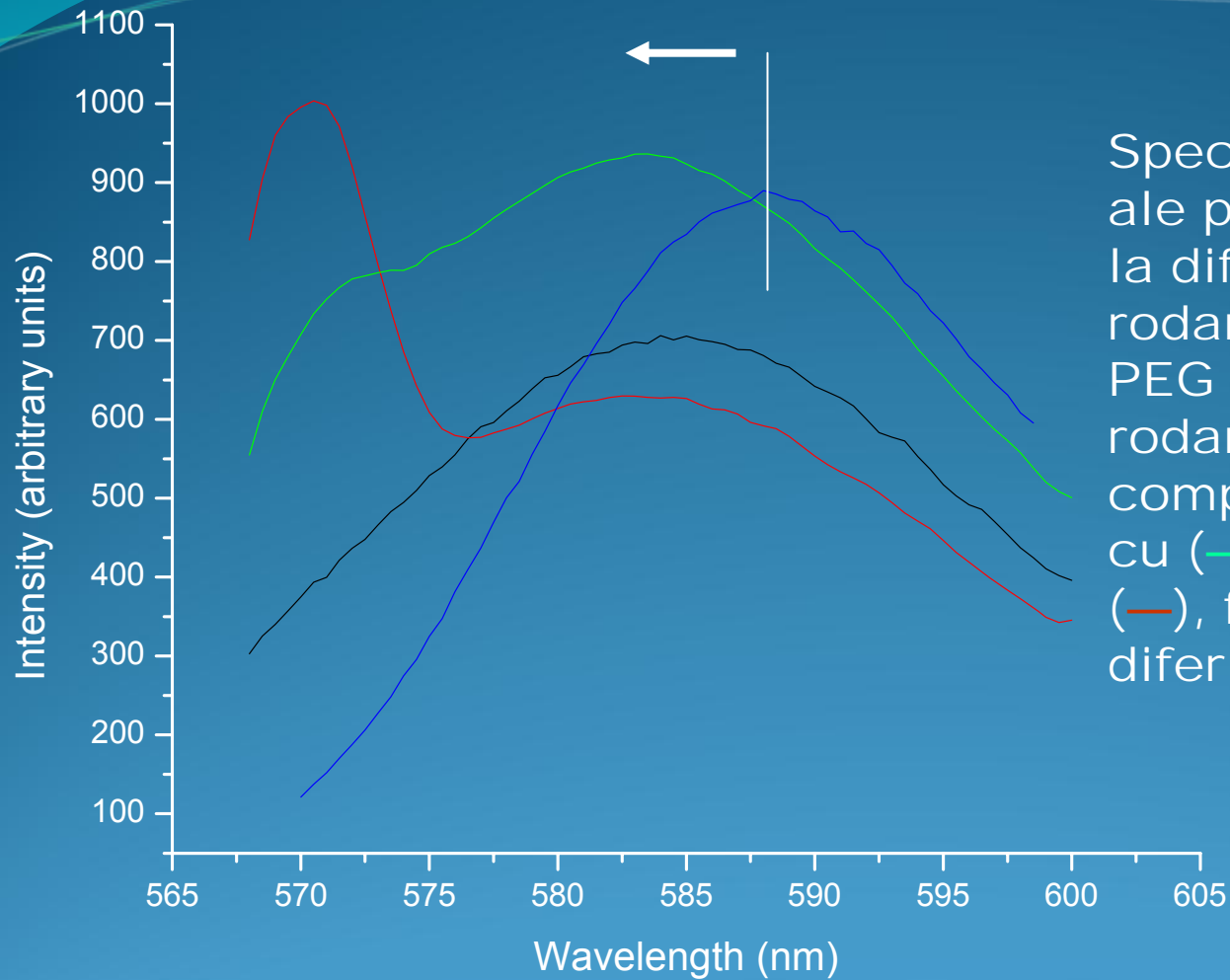
Spectru de difractie X  
pentru produsul hibrid  
cu ibuprofen (pH~5)



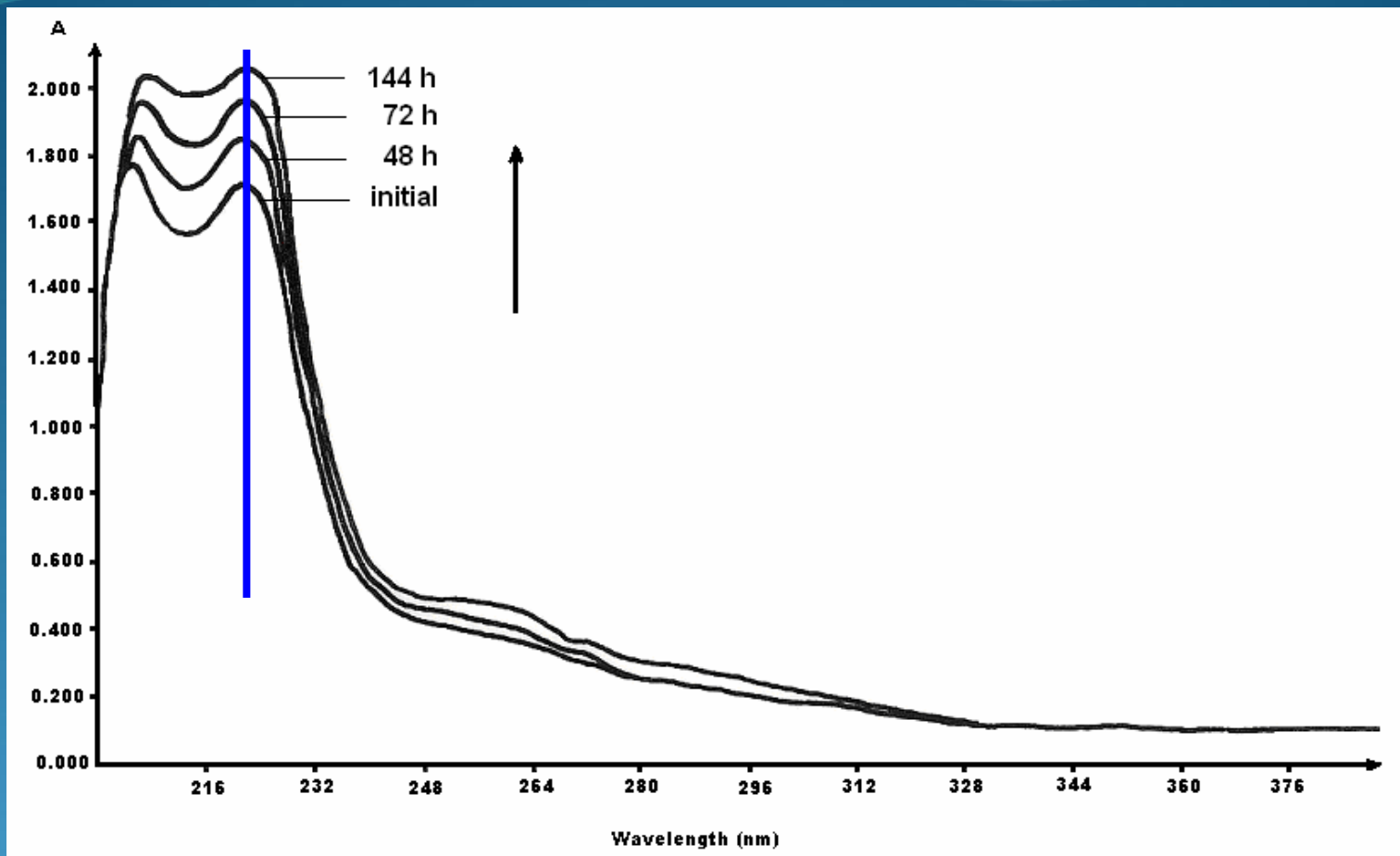




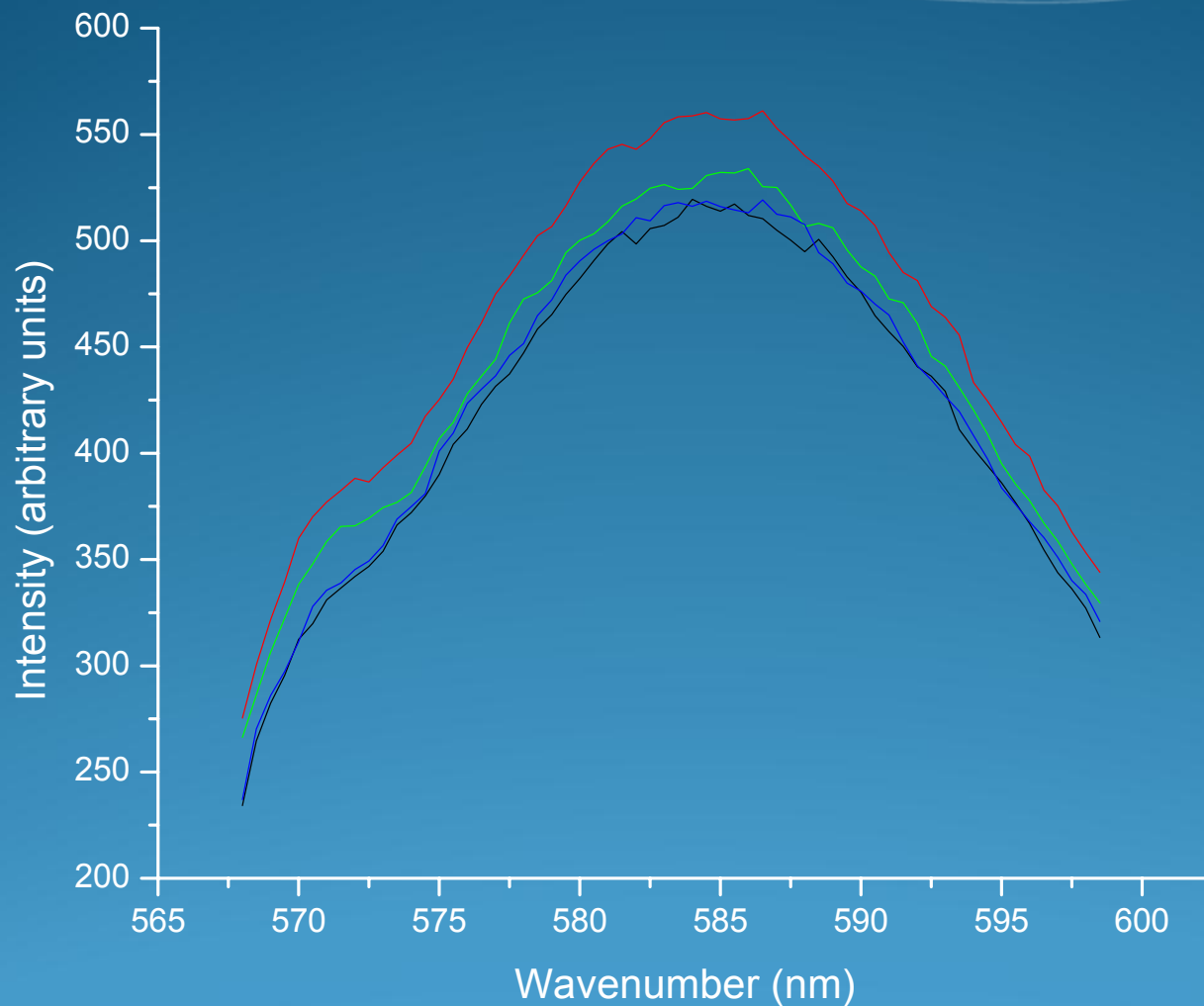
Imagini SEM pentru produsul hibrid (fara ibuprofen) la diferite rezolutii



Spectre de fluorescena ale produsilor inregistrate la diferite fante: lisamina rodamina B (—), fanta 2.5, PEG modificat cu lisamina rodamina B (—), fanta 3 si compozite pe baza de PEG cu (—) sau fara ibuprofen (—), fanta 5, la valori diferite ale pH-ului (5, 3)



Variatia in timp a absorbantei ibuprofenului (221 nm) in spectrul UV in solutie tampon (pH = 7.2)



Variatia fluorescentei pentru produsul hibrid ce contine ibuprofen in solutie tampon (pH = 7.2) dupa 1 h (—), 2h (—) si 3h (—)

## Concluzii

- ❑ PEG a fost utilizat drept agent de structurare in sinteza de compozite hibride
- ❑ Pentru a permite detectarea cantitativa si de precizie a moleculelor implicate, a fost utilizata drept proba fluorescanta clorura de sulfonil de lisamina rodamina B, ce prezinta un randament cuantic ridicat (aproape de unitate)
- ❑ Au fost sintetizate compozite pe baza de silice modificata organic, cu sau fara ibuprofen, un medicament antiinflamator nesteroidal insolubil in apa
- ❑ Microscopia electronica de baleiaj evidentiaza abilitatea PEG-ului de a opera drept agent de floclulare, precum si in inducerea separarii de faza
- ❑ Monitorizarea spectrului de absorbtie UV evidentiaza cresterea coeficientului molar de extinctie al ibuprofenului in solutie in comparatie cu valoarea acestuia in stare solida
- ❑ Variatia fluorescetei marcheaza descresterea maximului de emisie, proces ce poate fi atribuit cresterii concentratiei de ibuprofen din solutie