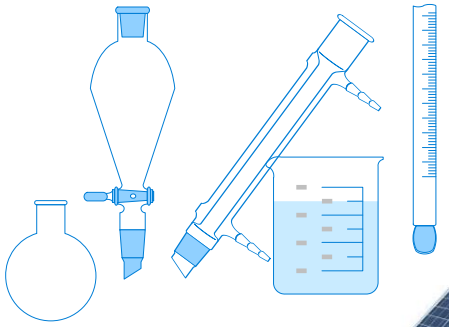
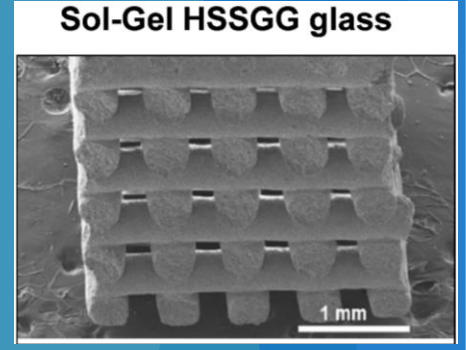
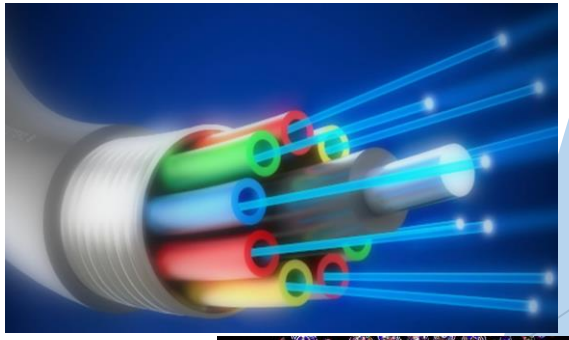
Sticla, un material cu proprietăţi accordabile

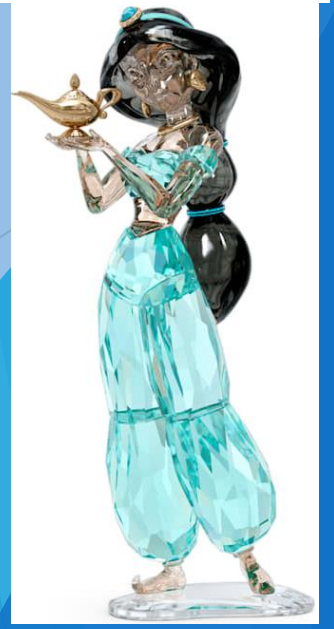
Gabriela DANILIUC, Cornelia ILIE,
George Valentin SĂFTOIU, Ludmila MOTELICA,
Angela SPOIALA, Denisa FICAI, Anton FICAI

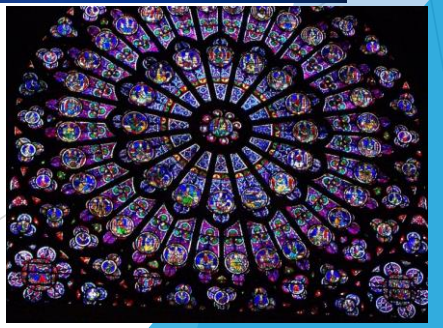
Sticla: Aplicatii clasice si Emergente





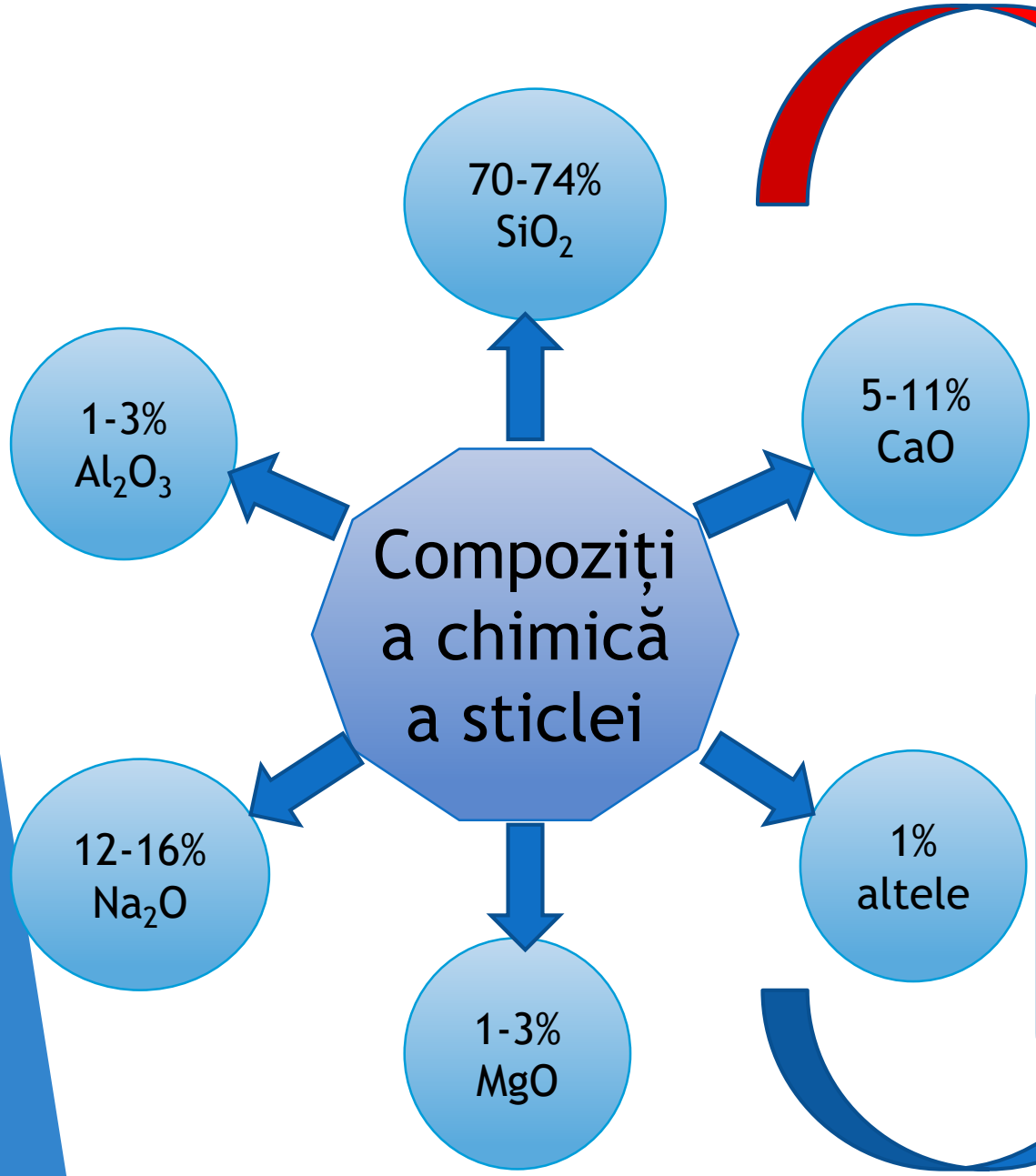




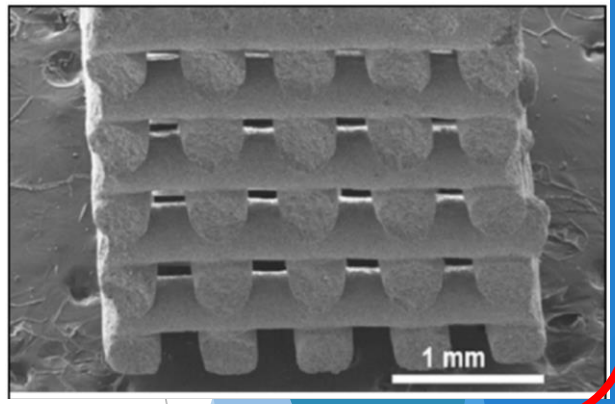


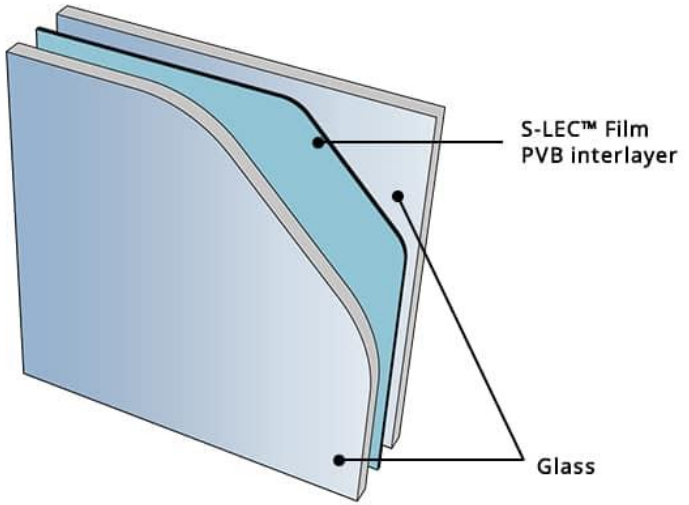
https://www.swarovski.com/

Impactul compozitiei si a modificarii suprafetei

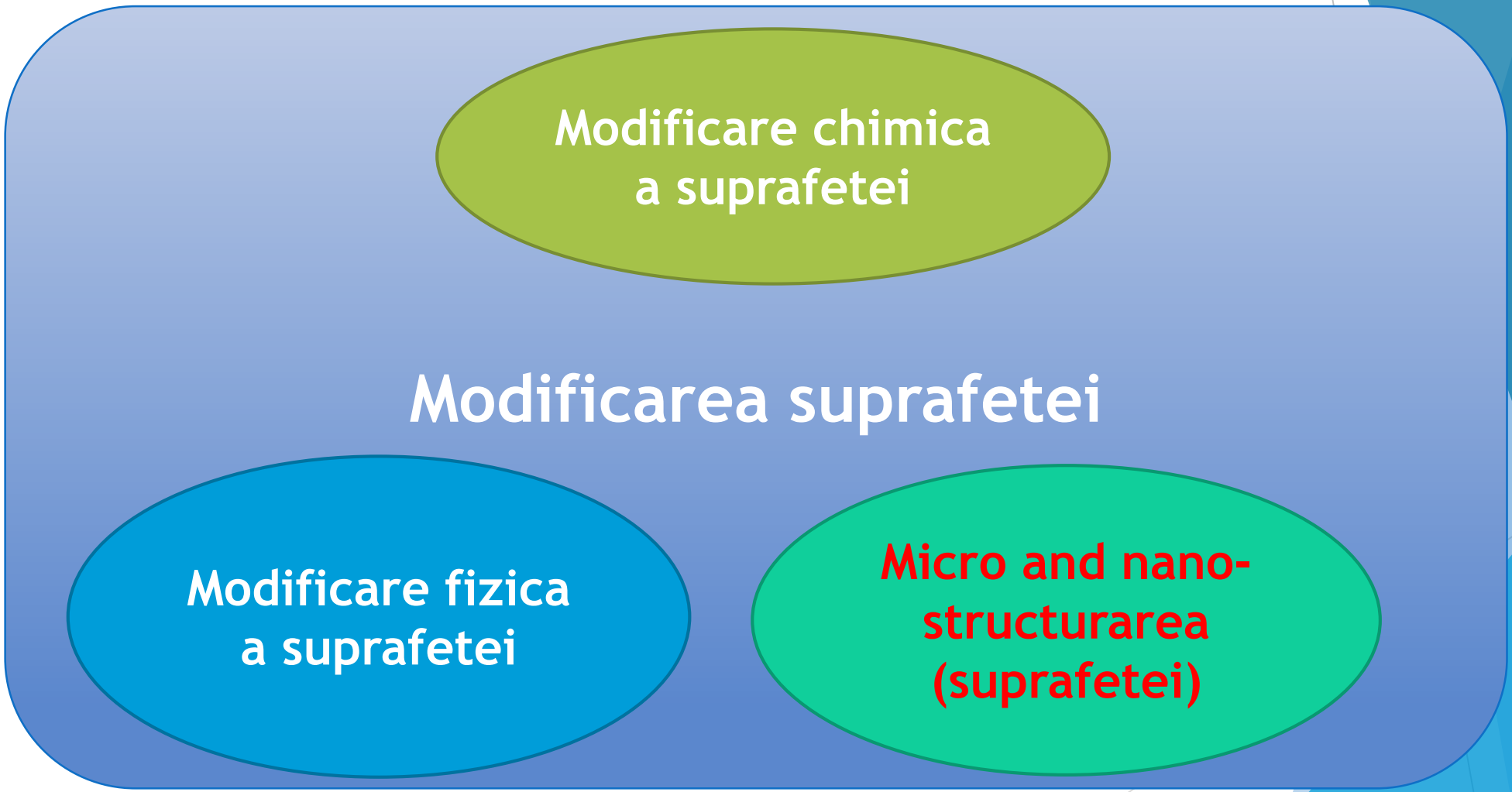


Sol-Gel HSSGG glass

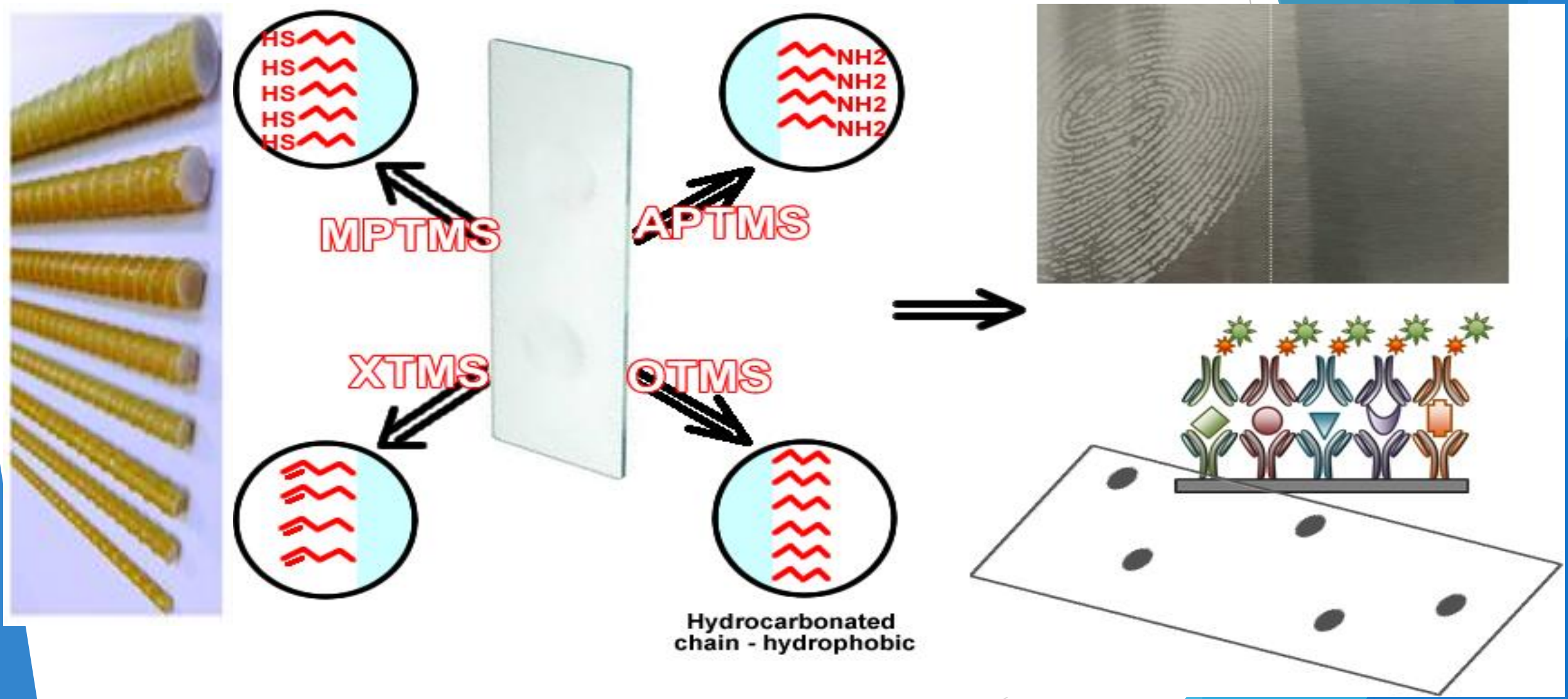




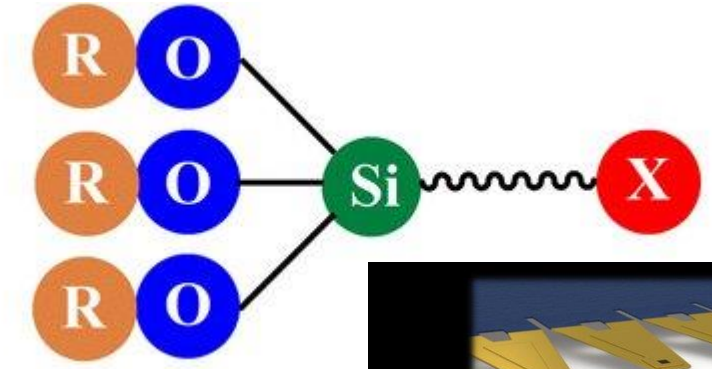
Tehnici de modificare a suprafetei

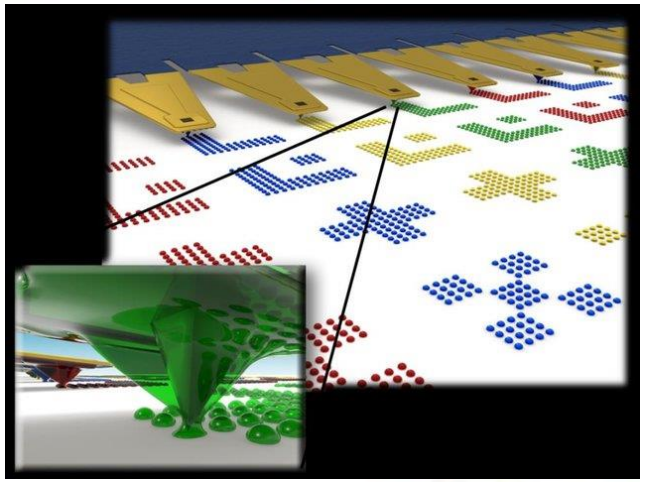


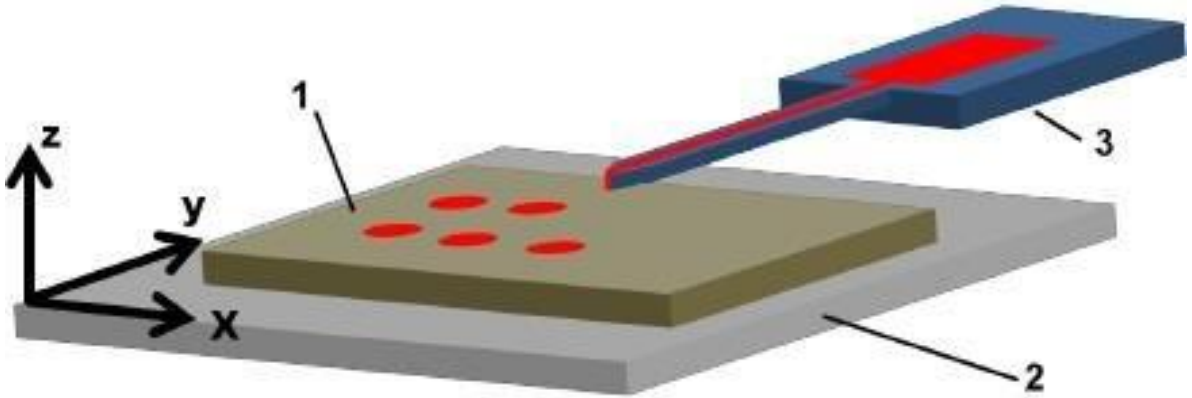
Functionalizarea chimica a suprafetei vs. aplicatie si performate



Agenti de silanizare si tehnici de tratare

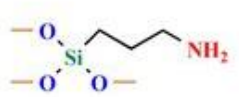




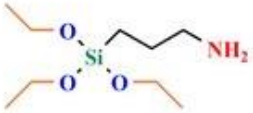


DOI: 10.13140/RG.2.2.23671.37287

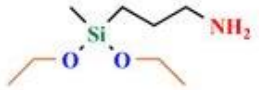
Aminosilane



(3-Aminopropyl)trimethoxysilane

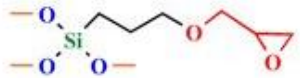


(3-Aminopropyl)triethoxysilane

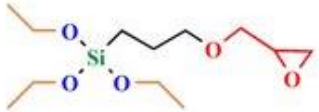


(3-Aminopropyl)diethoxymethylsilane

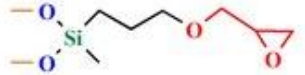
Glycidoxysilane



(3-Glycidoxypropyl)trimethoxysilane

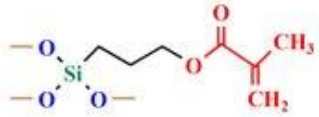


(3-Glycidoxypropyl)triethoxysilane

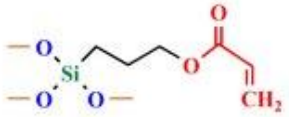


(3-Glycidoxypropyl)dimethoxymethylsilane

(Meth)acryloxysilane

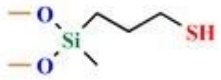


(3-Methacryloxypropyl)trimethoxysilane

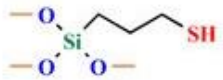


(3-Acryloxypropyl)trimethoxysilane

Mercaptosilane

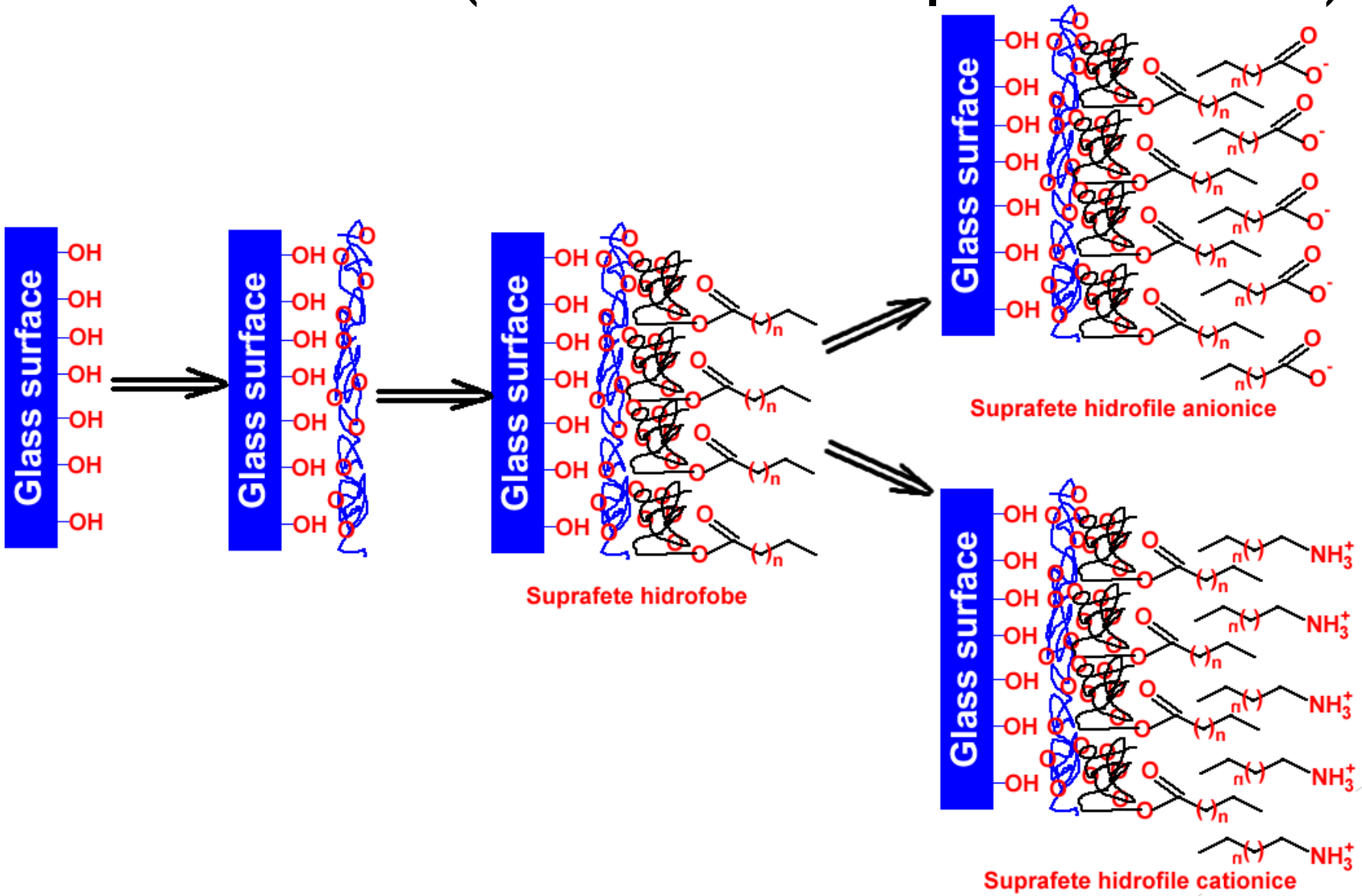


(3-Mercaptopropyl)dimethoxymethylsilane

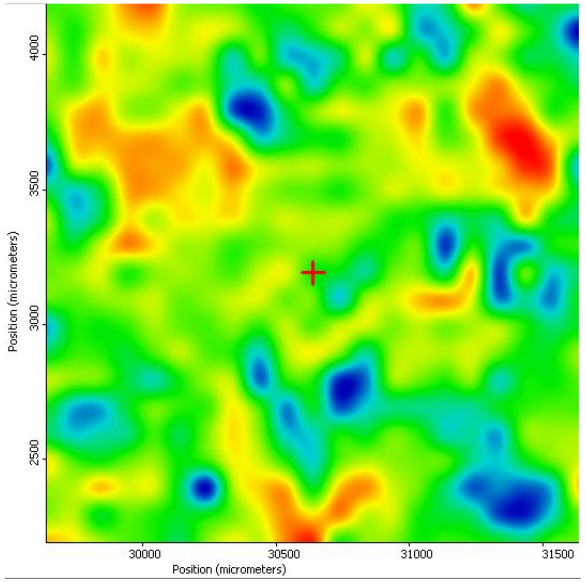


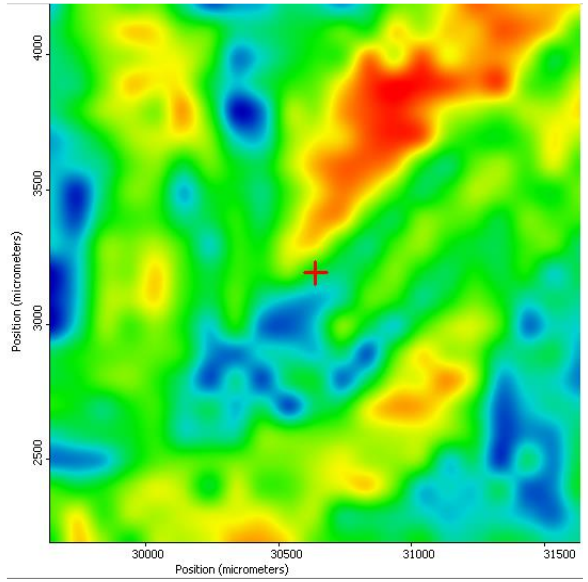
(3-Mercaptopropyl)trimethoxysilane

Modificarea suprafeţei de sticlă prin autoasamblare (având la bază depunere de PEG)

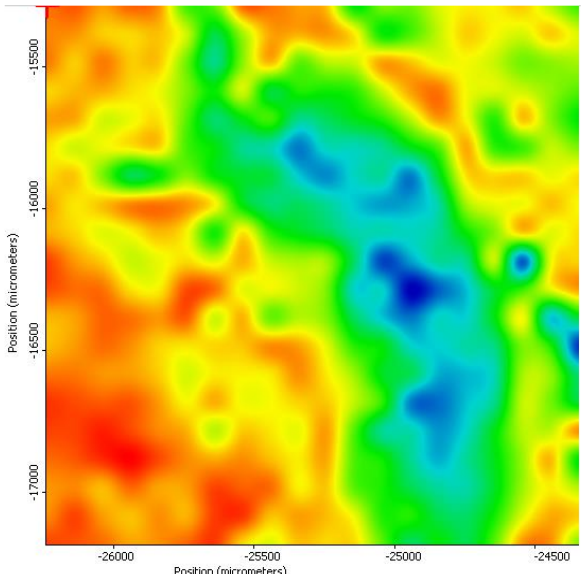


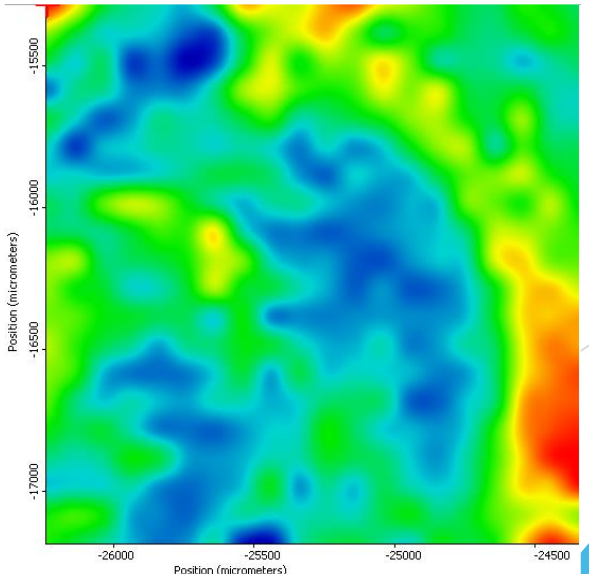
Modificarea complexa a suprafetelor de sticla prin autoasamblare





PEG 35 000

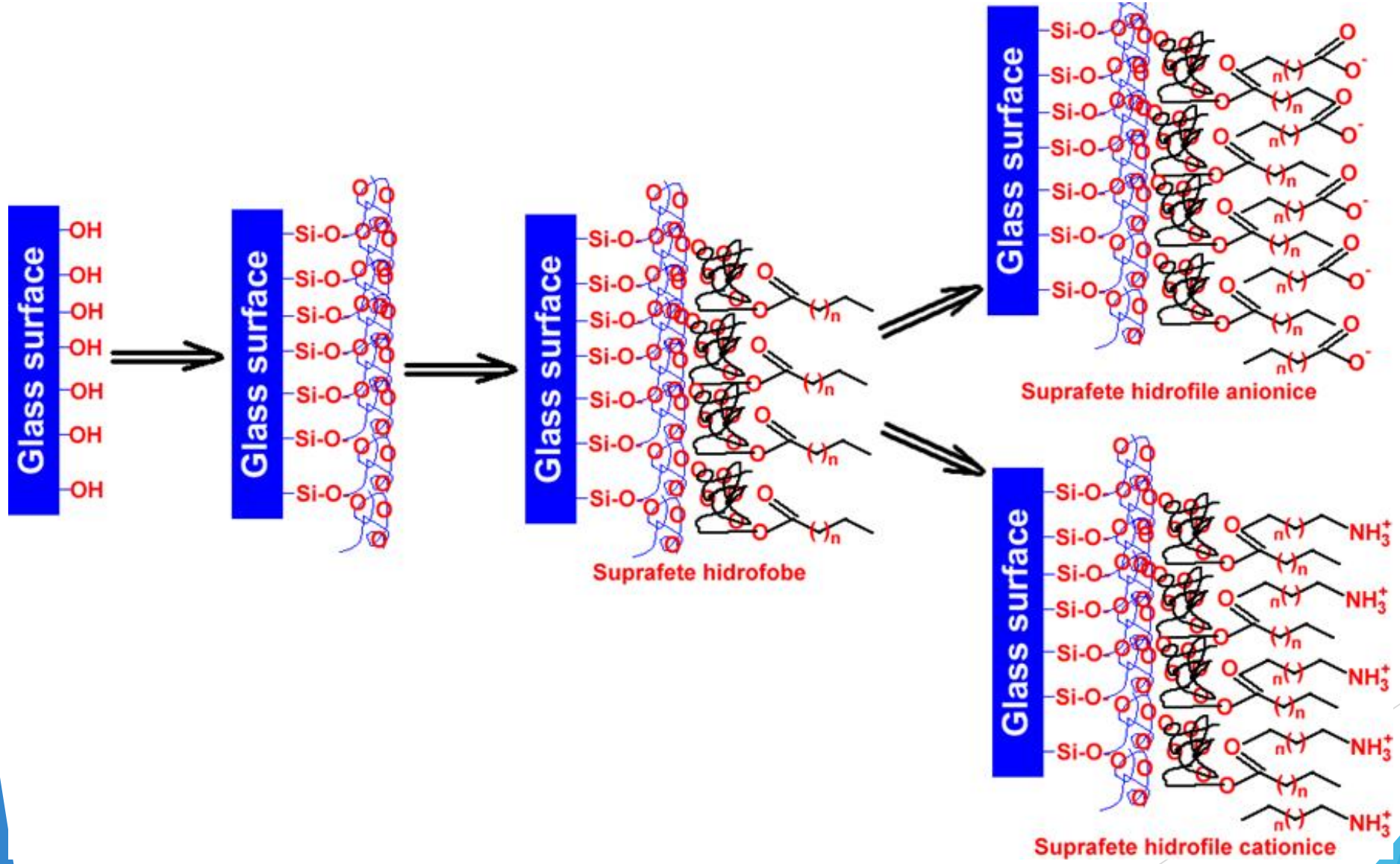




PEG 35000 / Triton X-100

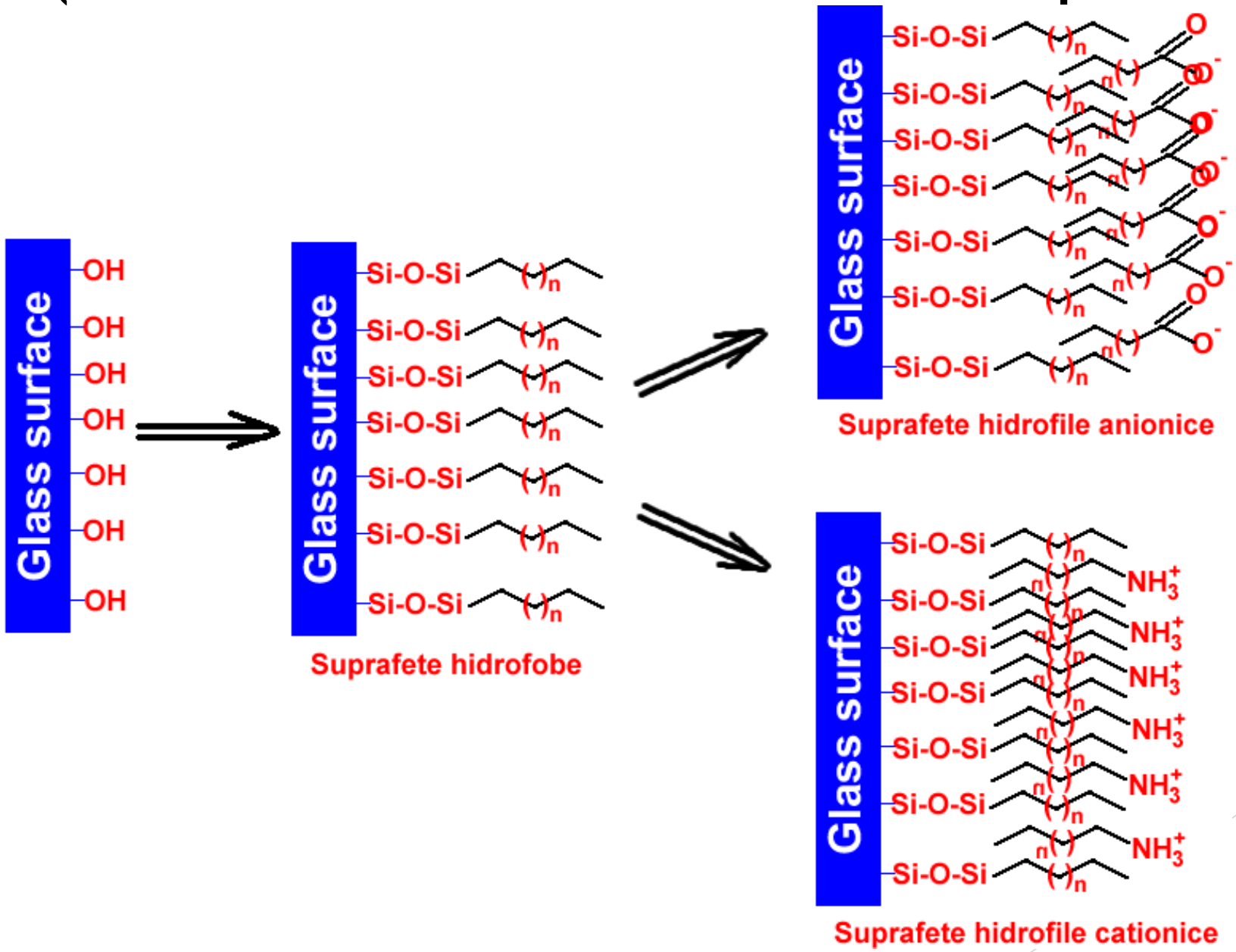
Imagini SEM aferente suprafetelor modificate

Modificarea suprafeţei de sticlă prin autoasamblare (având la bază silanizare / modificare preliminară chimică)



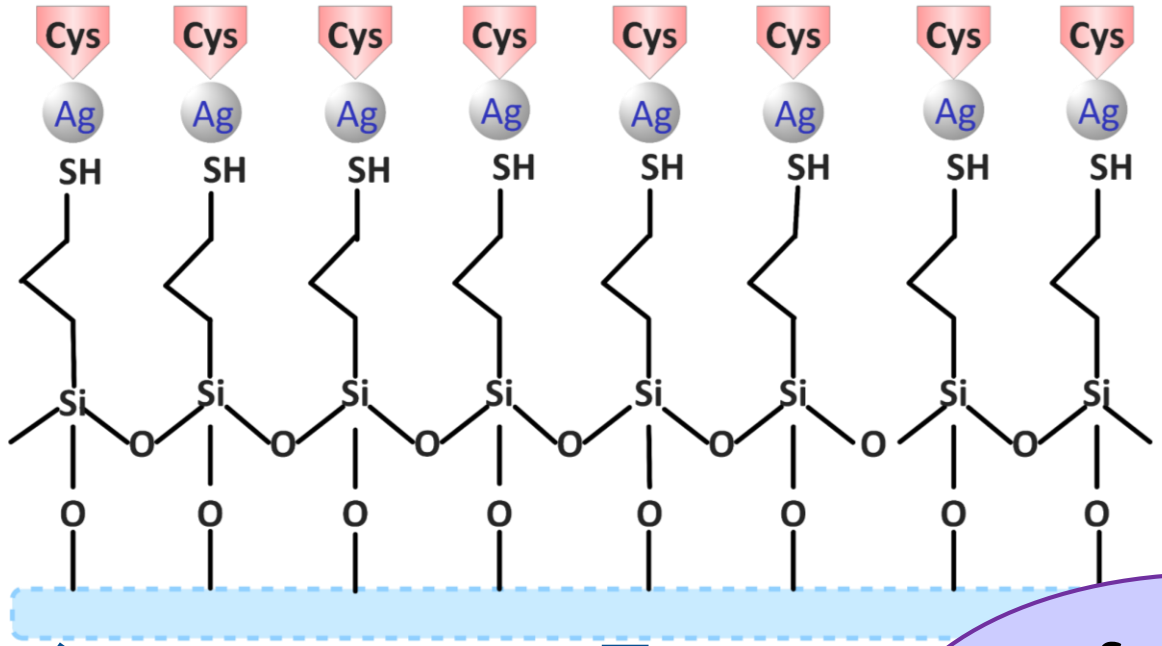
A00797/06/12/2022

Modificarea suprafeţei de sticlă prin autoasamblare (având la bază silanizare / modificare preliminară chimică)



A00797/06/12/2022

Silanizare suprafeței sticlei cu (3-mercaptopropil)trimetoxisilan și decorarea cu nanoparticule de argint și compuși organici



Ambalaje antimicrobine

Aplicații biomedicale

Suporturi antimicrobiene pentru inginerie tisulară

Biosenzori

Concluzii si perspective

- Sticla, si materialele silicatice/siloxanice nu sunt material / suprafete inerte chimic;
- Caracteristicile sticlei pot fi induse de compozitie, existand sticle inerte dar si bioactive, cristalinitate controlata, rezistenta termica variabila, etc.;
- Suprafața sticlei poate fi modificată atat fizic cat și chimic, modificarile chimice au avantajul major ca sunt stabile in timp, chiar si in conditii severe;
- Silanizarea este metoda cea mai comuna de modificare a suprafetei materialelor silicatice, grupele functionale introduce avand rolul de a induce proprietatile noi sau imbunatatite dorite;
- Marea variabilitate a acestor agenti de silanizare permite accordarea proprietatilor cu aplicatiile dorite;
- Modificarea strat cu strat, prin autoasamblare, confera flexibilitate maxima, inducand modificari majore ale suprafetelor: hidrofob=> hidrofil; absorbtie variabila de specii chimice; suprafete aderente/non-aderente; etc.
- Ca perspective ne propunem modificari avansate a suprafetelor in scopul dezvoltarii de suprafete adsorbante (pentru pesticide, antibiotic, material genetic); suprafete aderente/antiaderente (amprente); etc.

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CA20126 - Network for research, innovation and product development on porous semiconductors and oxides (NETPORE)

PN-III-P2-2.1-PED-2021-1788, within PNCDI III; 647PED/2022, Nanostructured innovative nutraceuticals with synergistic bioactivities for hepato-digestive protection - Nutrasinpro

TE95/2022: “Functionalizarea si decorarea cu nanoparticule a suprafetei de sticla: O abordare promitatoare de a induce aplicatii noi” – Glass.

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