The Nanoscience Cooperative Research Center, CIC nanoGUNE, located in Donostia / San Sebastian, Basque Country (Spain), is currently looking for a

MASTER STUDENT
to work on

Nanomaterials

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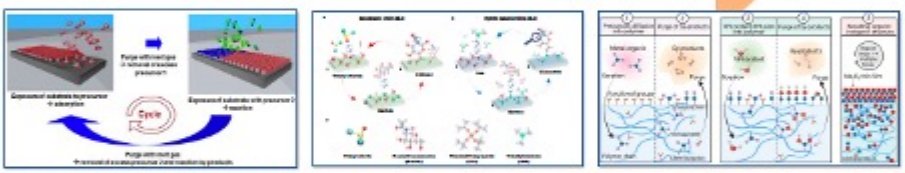
Nanomaterials Gro

Methodology

The fabrication of hybrid materials by means of vapor phase processes is very manifold and the routes rely on a plethora of growth methodologies. Among the most prominent techniques are those that base on the principle of atomic layer deposition (ALD) and involve modifications of the technique to enable treatment of organic materials.

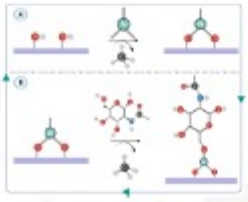
ALD | MLD | VPI



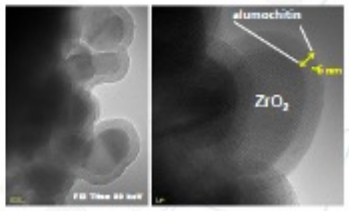
K. Asharbekova, K. Asharbekova, G. Bolla, O. Yurkevich, M. Knez, M. Knez, Vapor phase processing: A novel approach for fabricating functional hybrid materials. Nanotechnology 31 (2020)

Biomimetic Antimicrobial Films

Vapor phase process for growing nanoscale coatings of chitin-based materials, based on molecular layer deposition (MLD), which enables the growth of a highly conformal film with precise thickness control and quality. The hybrid metallochitins are greatly biocompatible. *In vitro* tests with Human Embryonic Kidney (HEK293T) and human fibroblast cells confirmed even better attachment and stronger promoted cell proliferation on metallochitin-coated substrates than on the positive control substrates.

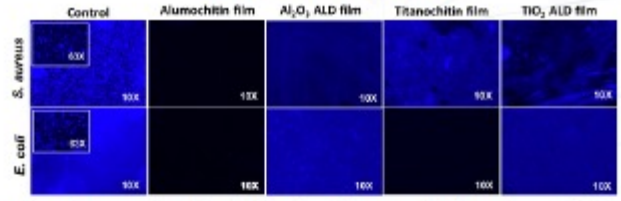


Proposed chemistry for the growth of Alumochitin



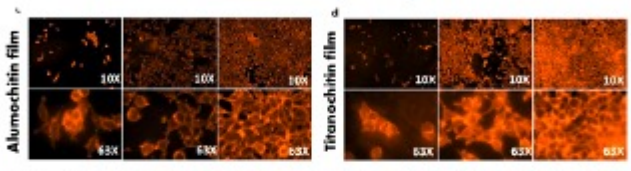
HR-TEM images of a thin alumochitin film grown on ZrO_2 Nanoparticles at 115 °C

Antimicrobial Properties



Confocal microscopy images of S. aureus and E. coli bacterial biofilms after 24h of exposure to the different substrates. Original magnification 10x. Crystalline nanocellulose film was used as a control. Bacteria were stained with DAPI (blue).

Biocompatibility



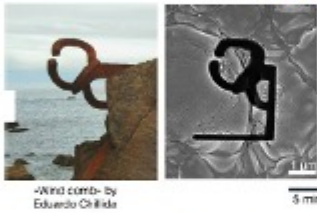
Confocal microscopy images of HEK (Human Embryonic Kidney) 93 cells cultured for 1, 3 and 6 days on different substrates, stained with CellMask Orange Plasma. Original magnification 10x (scale bar= 30 µm) and 63x (scale bar= 10 µm).

Preservation of Cultural Heritage

Self-he

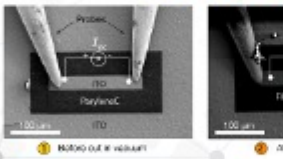
An entropy-driven NP reorganization, as described the healing of metal oxides.
As a first step, a system with MeO nanoparticles matrix, is needed. This can be obtained by VPI of a with dispersed NPs can then serve as a reservoir defect formation, synergistic chemical and physica eventually close the defect.

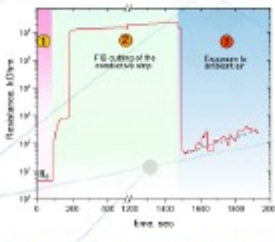
PVC/Z



«Wind comb» By Eduardo Chillida

Restoring the





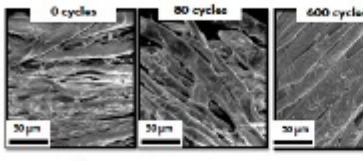
1. FIB etching of the coating: conductive strip
2. Cutting the stripe by FIB to destroy the con
3. Measuring the resistance while exposing th

O. Yurkevich, E. Modin, I. Šarić, M. Petravić, M. Knez, P oxides. Adv. Mater. 2022, 2202080.

Functiona

Textiles serve as a versatile platform for incorpora textiles, infused with nanomaterials and functional fashion, sports, and beyond. Functional textiles capabilities, antibacterial features, and energy responsive materials. A way of functionalizing te inorganics by VPI.

Denim Jeans, processed with Ti



Reduction of Bac

Sample	cycles number	bact
Control	0	
$TiCl_4$+H_2O	50	
$TiCl_4$+H_2O	120	
$TiCl_4$+H_2O	300	

What happens to stone

Candidates should **apply** by completing the form below and attaching the following documents:

a. A complete CV and academic record
b. A motivation letter is also recommended

The **deadline** for applications is **29/02/2024**.

NOTES:
(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.
(ii) Additional information about nanoGUNE's commitment towards HR excellence in Research and Gender Equality are available on our website.
(iii) We encourage you to subscribe to our HR mailing list to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.