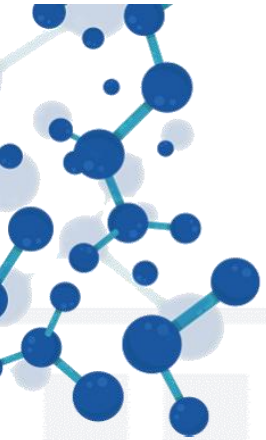
UNIVERSITÀ
DEGLI STUDI
DI TRIESTE

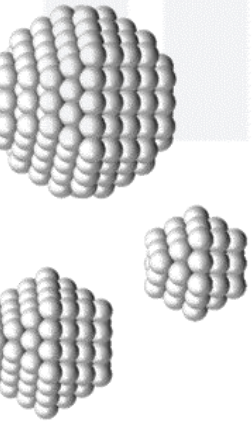
Materials and Chemical Engineering for Nano, Bio, and Sustainable Technologies

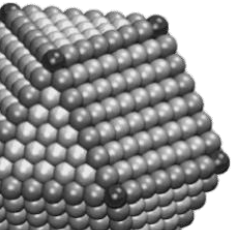
UNIVERSITÀ DEGLI STUDI DI TRIESTE

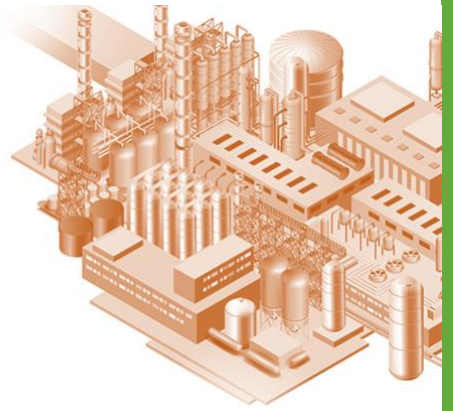
Master of Science Degree («Laurea Magistrale») in

«Materials and Chemical Engineering for Nano, Bio, and Sustainable Technologies»

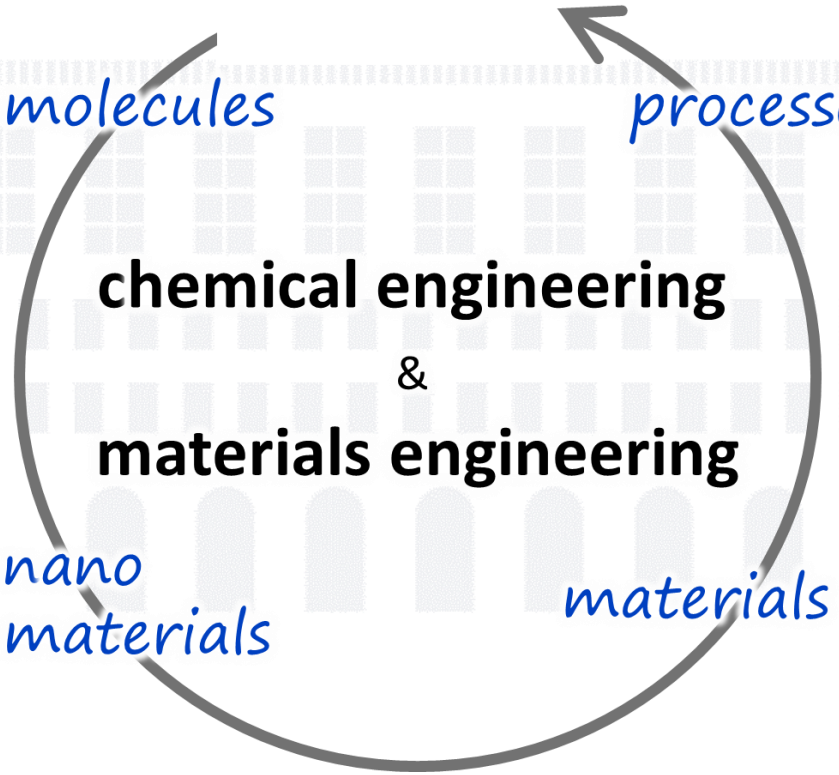


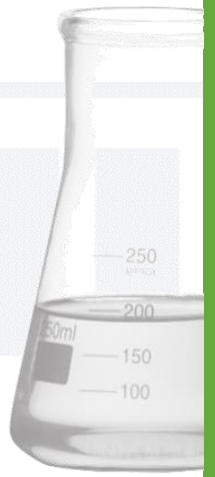


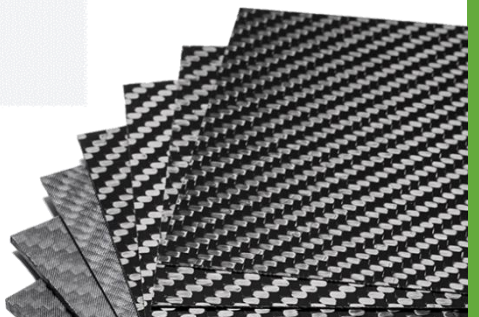




a «multiscale» course







Area tecnologico-scientifica

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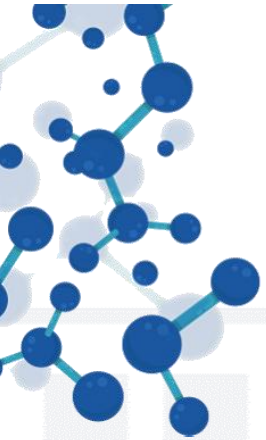
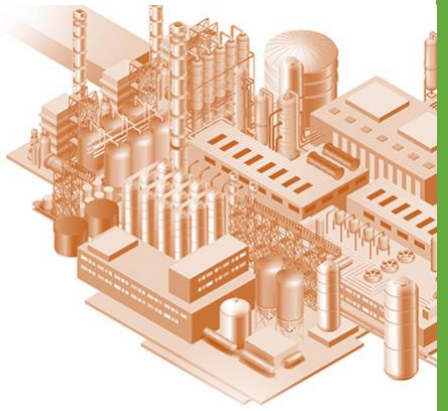
materials and processes are cornerstones of innovation





European Commission

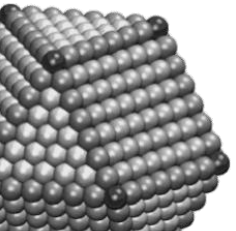
Key Enabling Technologies

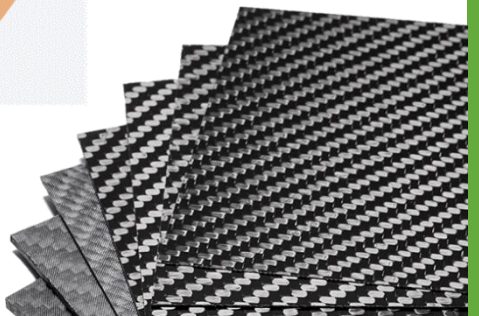
advanced materials
advanced manufacturing technologies
nanotechnology
micro and nanoelectronics
industrial biotechnology
photonics

European Commission

Emerging Disruptive Technologies

3D printing
Advanced Robotics
New computing technologies
Energy capture, storage, transmission
Ubiquitous linked sensors
Space technologies





Area tecnologico-scientifica

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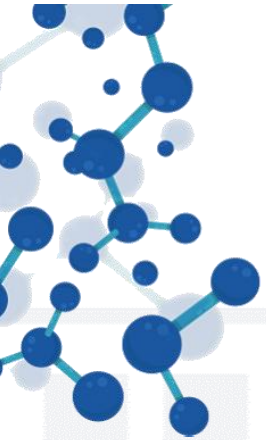
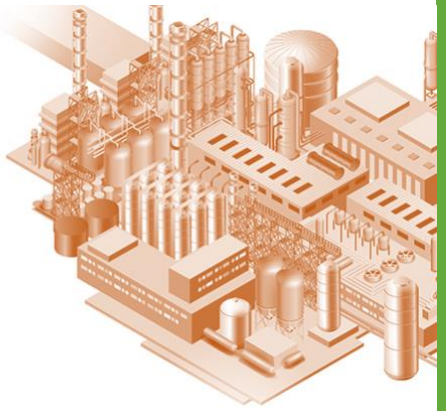
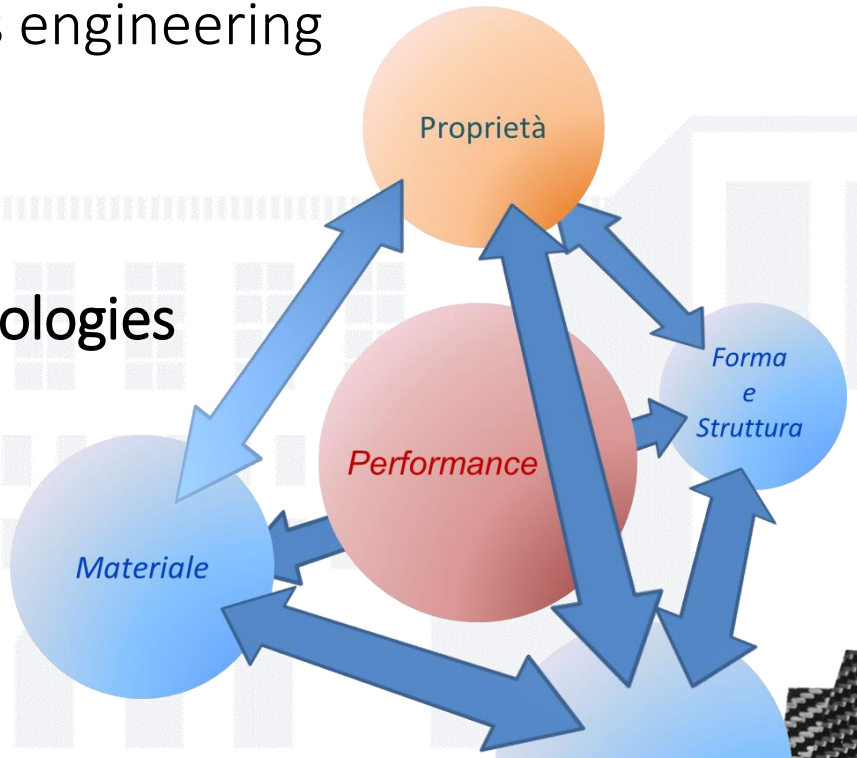
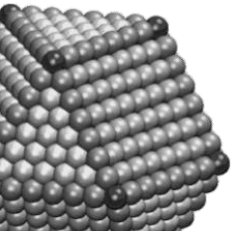
objectives

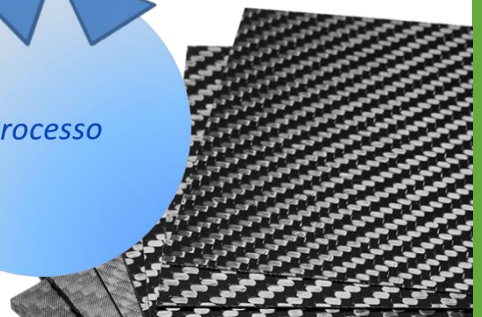




- solid fundamentals in physics and chemistry
- advanced training in materials engineering and chemical engineering
- focus on hot topics:
  - ✓ Advanced industrial technologies
  - ✓ Nanotechnology
  - ✓ Biotechnology
  - ✓ Sustainability







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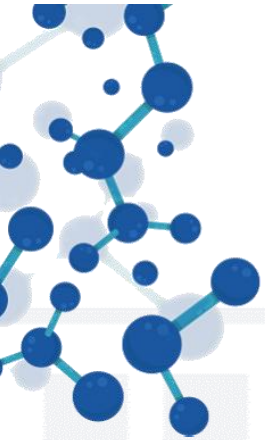
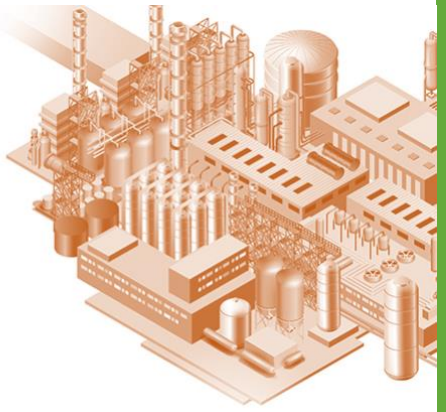
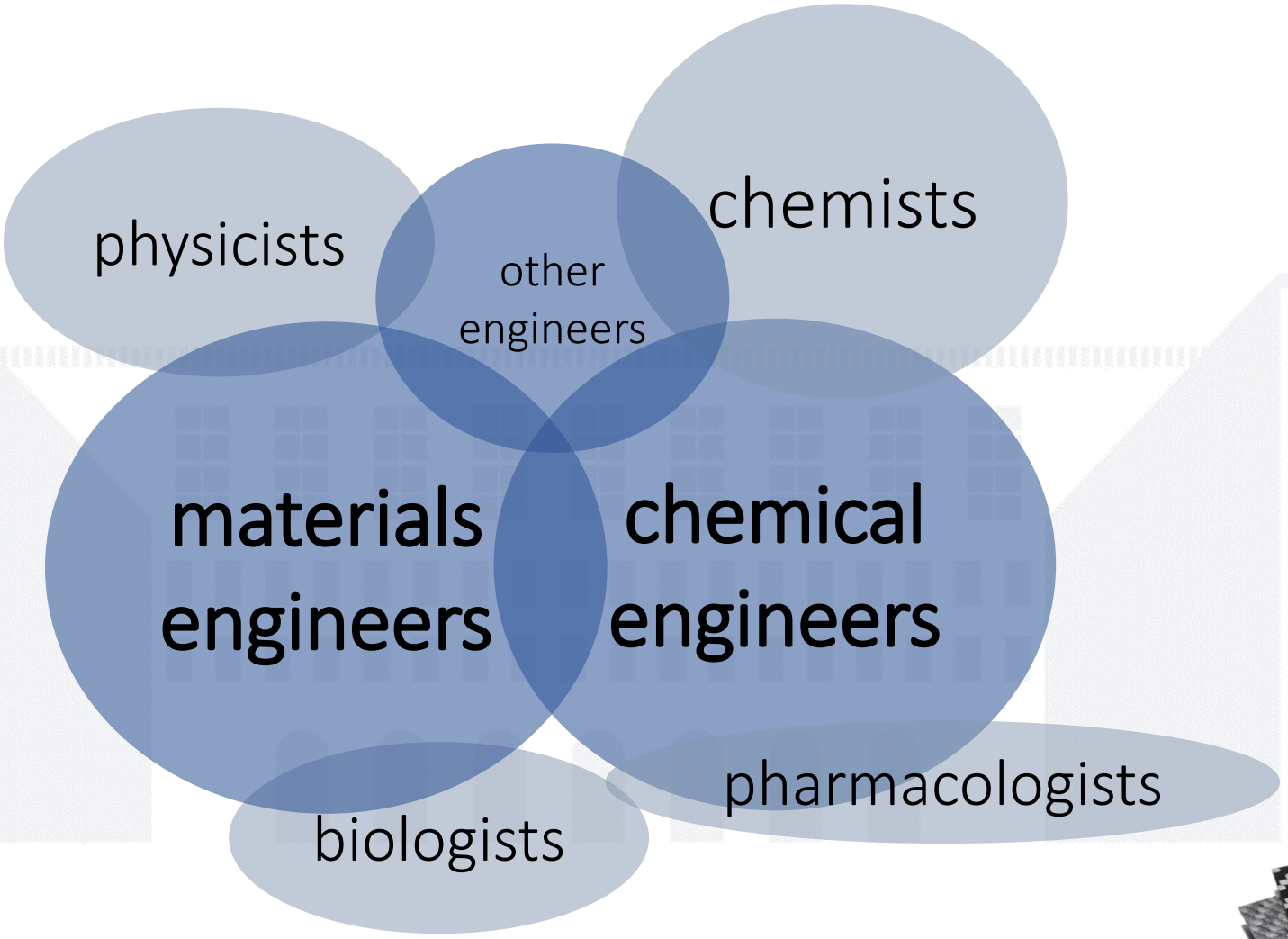
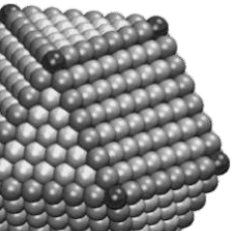
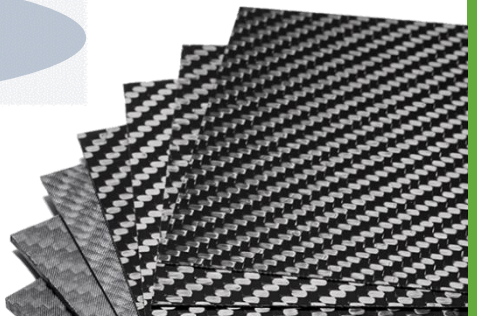
a multidisciplinary environment











Area tecnologico-scientifica

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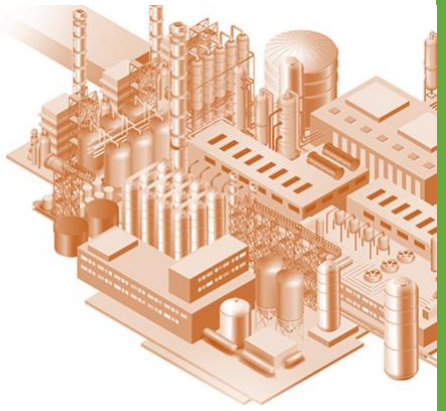
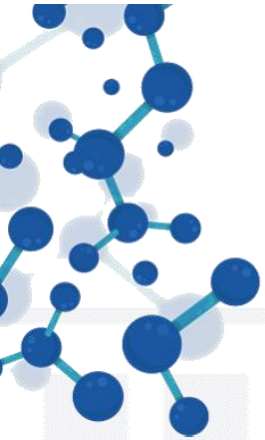
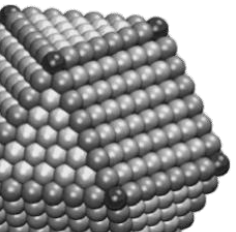
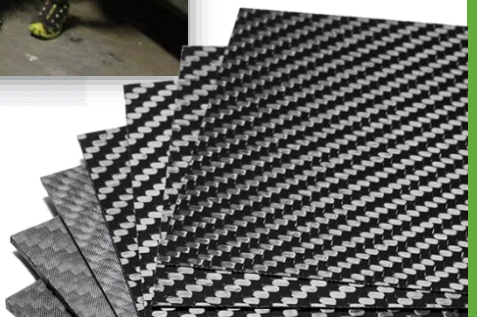
...and relaxed!

a multidisciplinary environment









Area tecnologico-scientifica

raft_ING – Isonzo river

climb_ING
Val Rosandra

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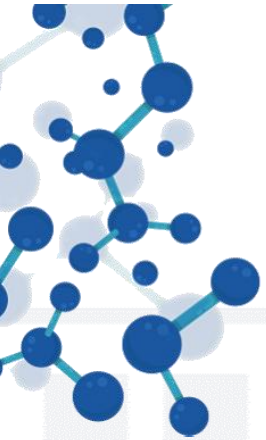
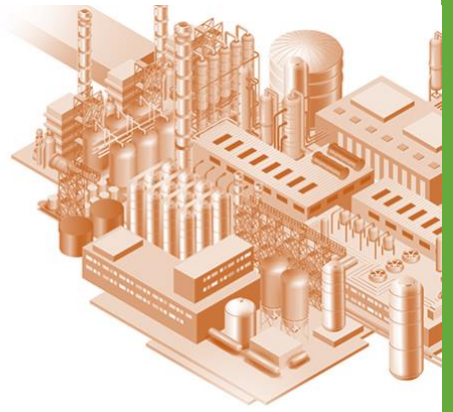
a nework of collaborations

- knowledge transfer with companies and institutions -





Materials and Chemical Engineering for Nano, Bio, and Sustainable Technologies

KeraTech ITALIAN STRONG EXPERTISE

AREA SCIENCE PARK

iom Istituto Officina dei Materiali

Elettra Sincrotrone Trieste

COVEME THE VALUE OF INNOVATION

ICTP The Abdus Salam International Centre for Theoretical Physics

ma per seguir virtute e canoscenza SISSA

WÄRTSILÄ

MAGNETI MARELLI

OGS

CeramTec THE CERAMIC EXPERTS

cbm cluster in bio

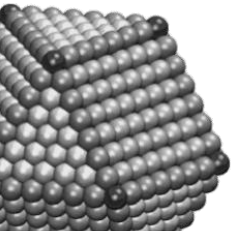
SMS MEER SMS group

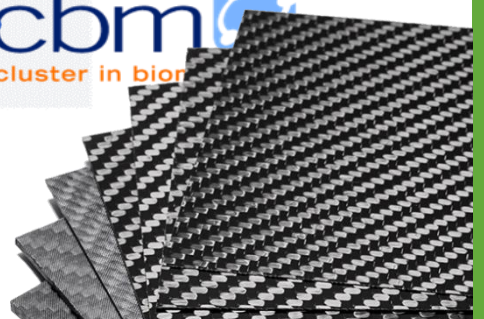
SIEMENS

CRO AVIANO

BURLO

LAMA FVG





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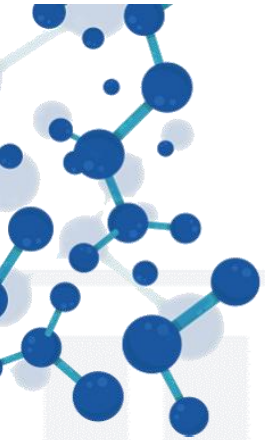
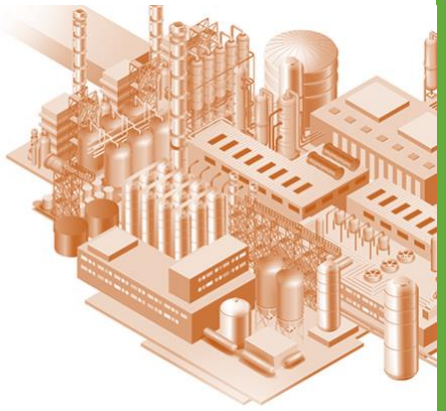
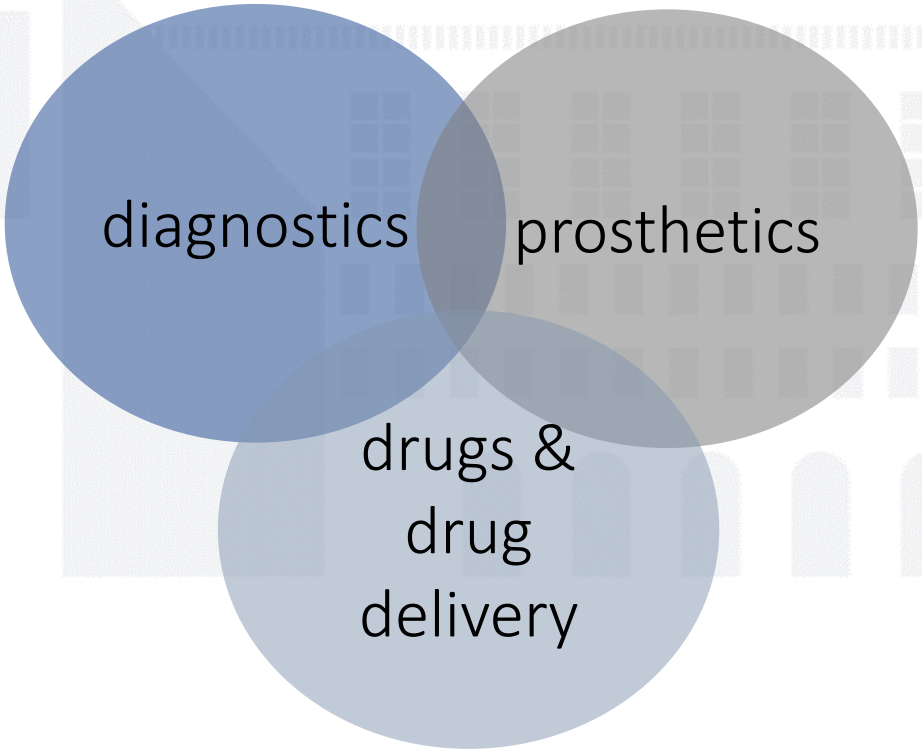
advanced applied research

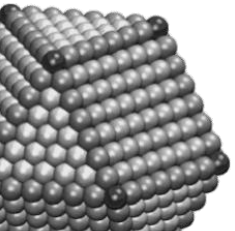


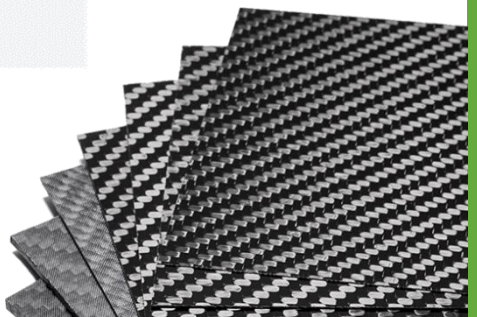


biomedical applications
of materials and processes



- (bio)photonics
- cellular mechanics
- nanotechnology
- multiscale simulation
- modeling of transport phenomena
- data science





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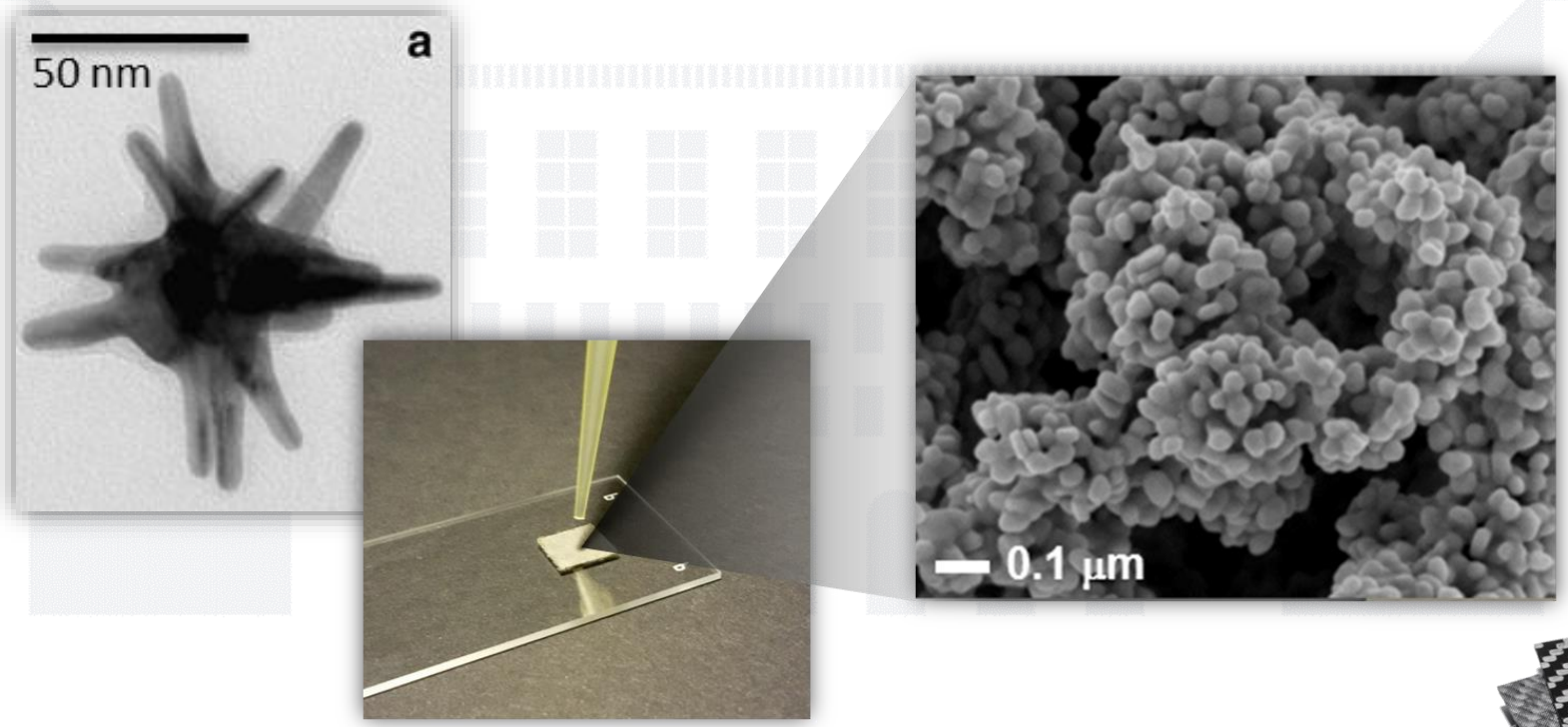
advanced applied research

nanotechnology for sensors



Area tecnologico-scientifica

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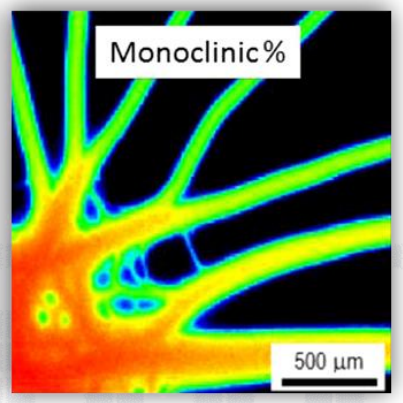
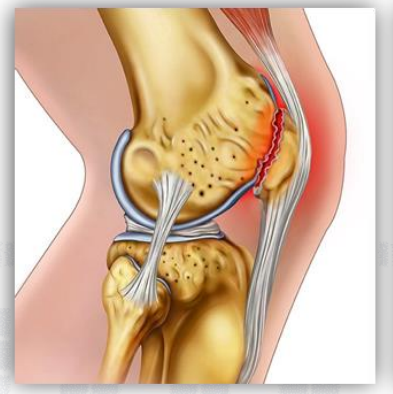
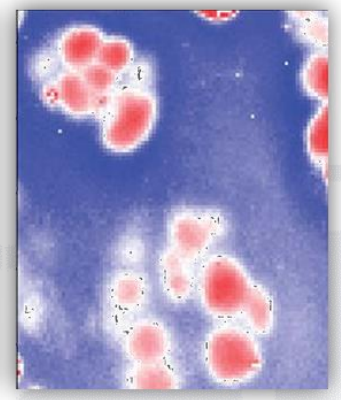
advanced applied research

(bio)photonics



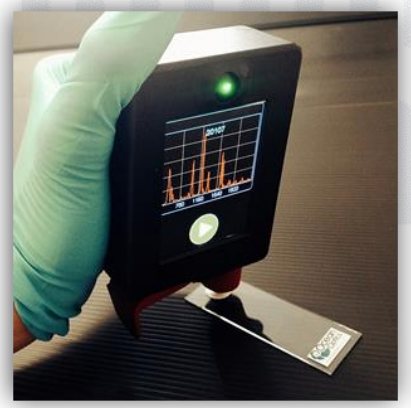
(materials imaging for prosthetics)





(imaging of biological tissues)

(non-invasive diagnostics)



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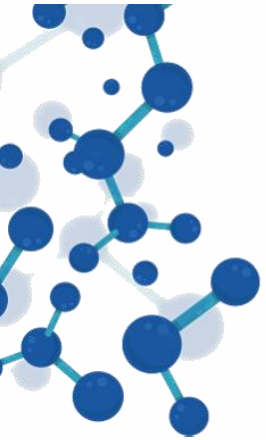
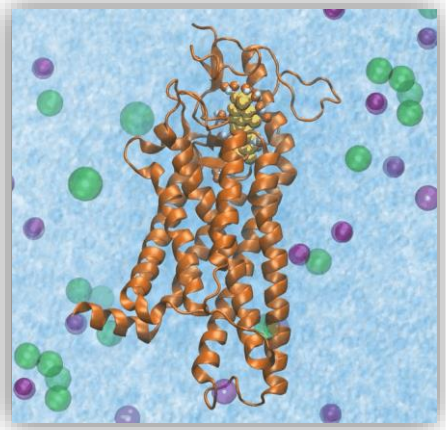
advanced applied research

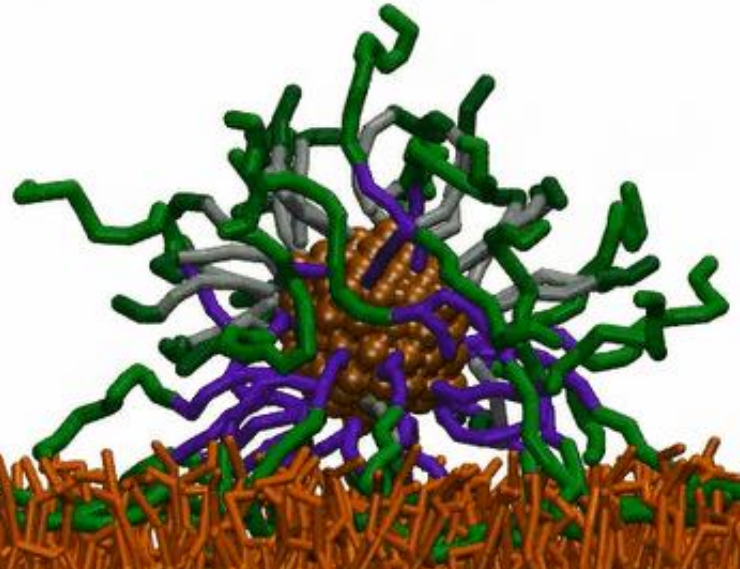
multiscale simulation



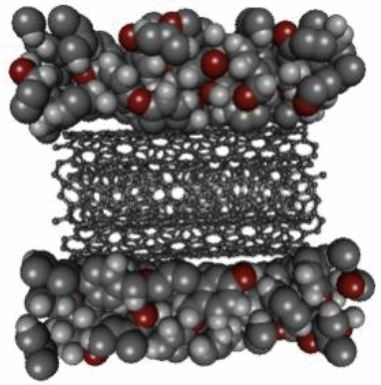
(drug mechanisms)

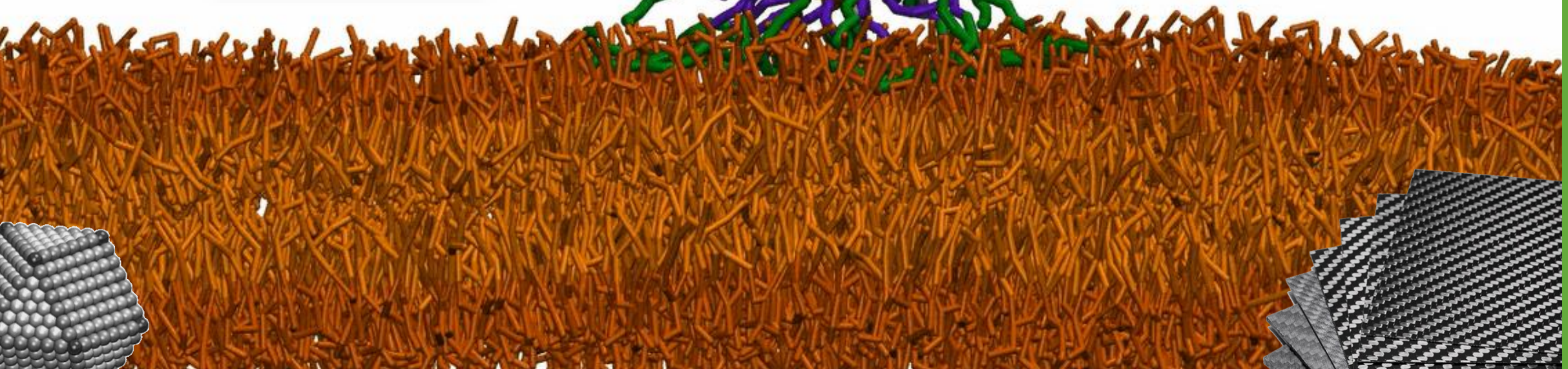


(nano-bio interaction)



(nanocomposites)





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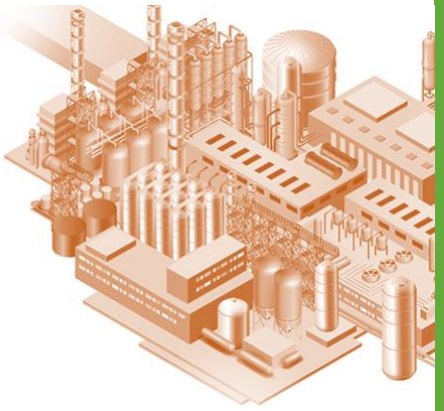
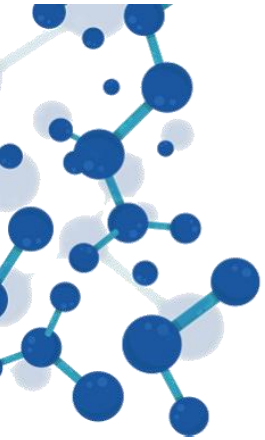
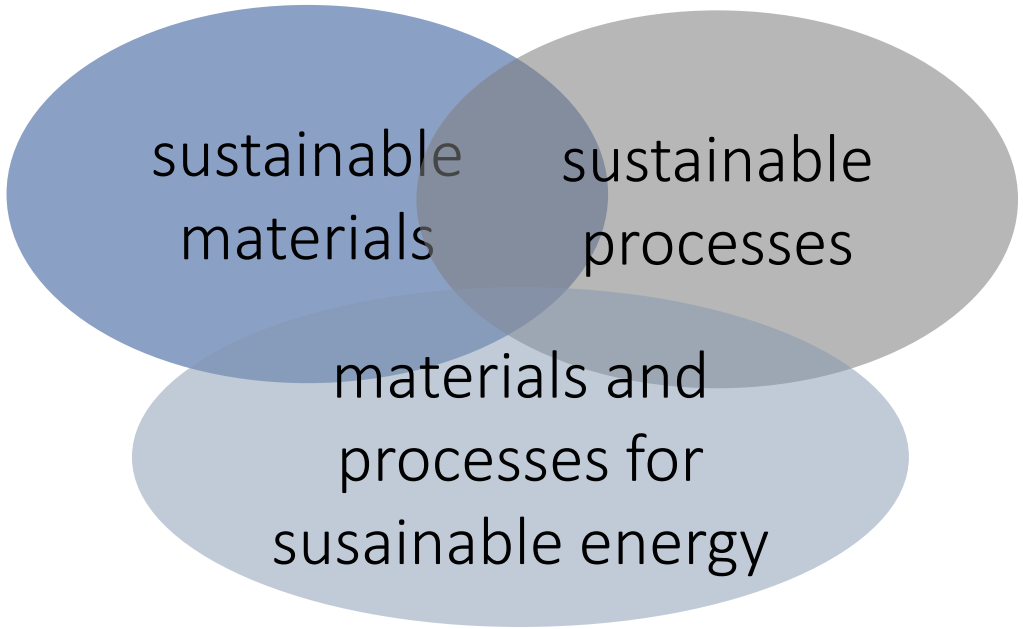


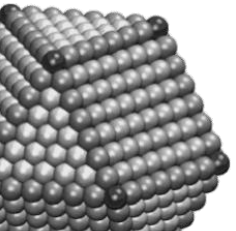
advanced applied research

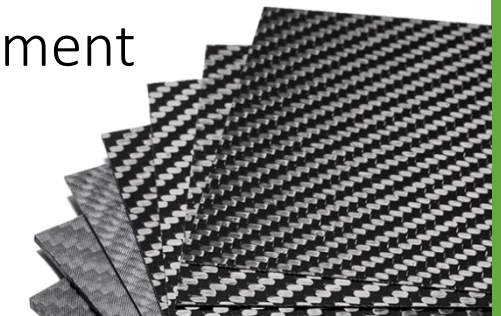


materials and processes for
energy and environment



- synthesis of advanced materials
- characterization
- nanotechnology
- bioconversion
- treatment of solids and liquids
- process modeling
- Life Cycle Assessment





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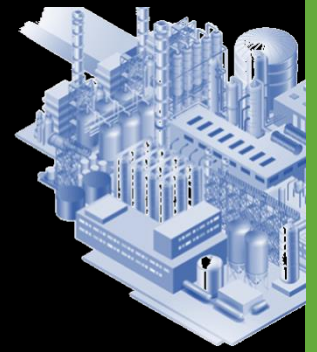
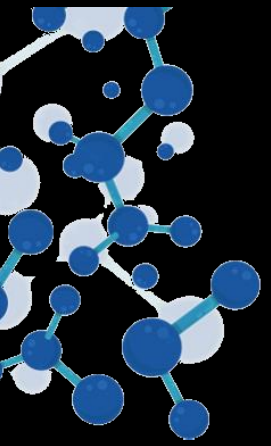
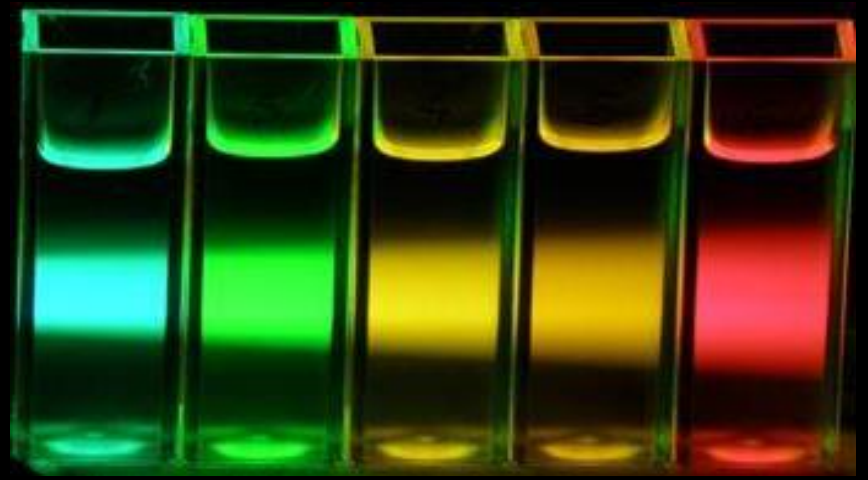
advanced applied research

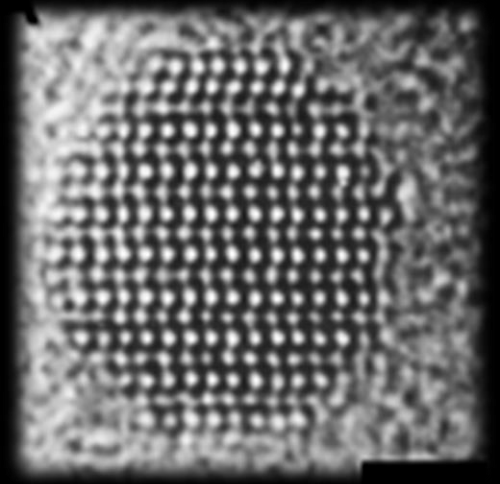


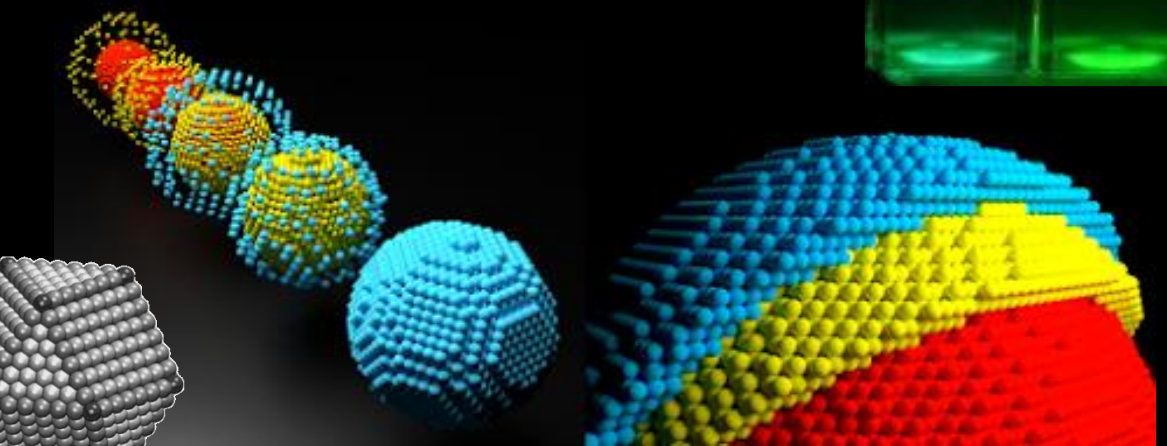


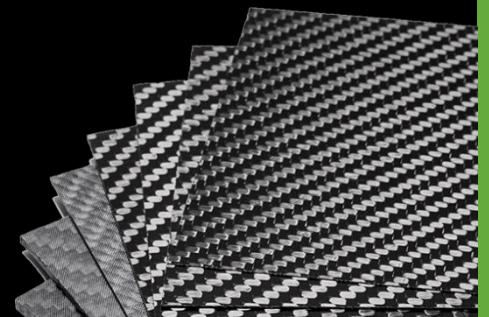
nanotechnology for sustainable energy

(nanostructures for photovoltaics and photocatalysis)









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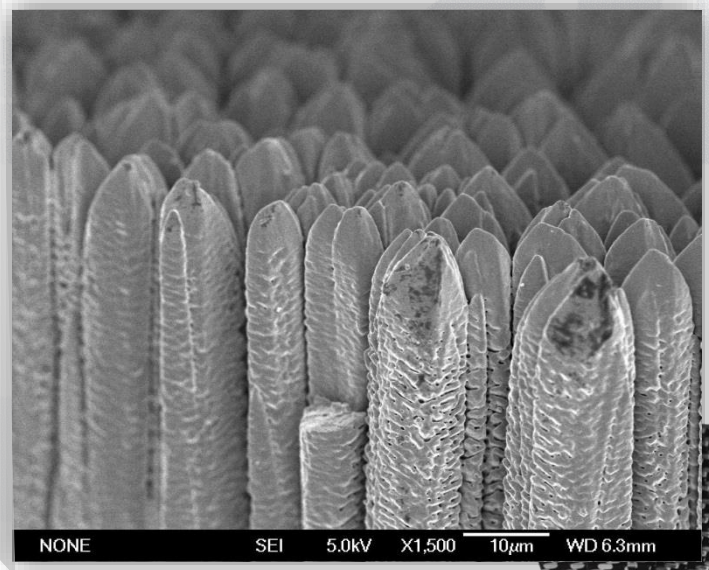
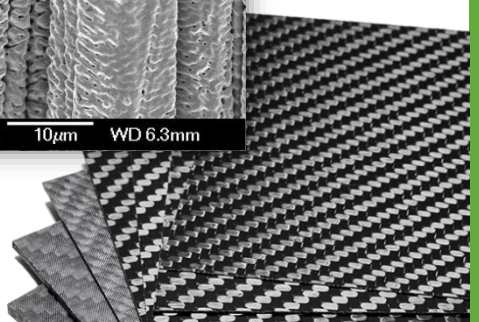
advanced applied research

materials for sustainable energy production

(ceramic materials for thermal barrier coatings)





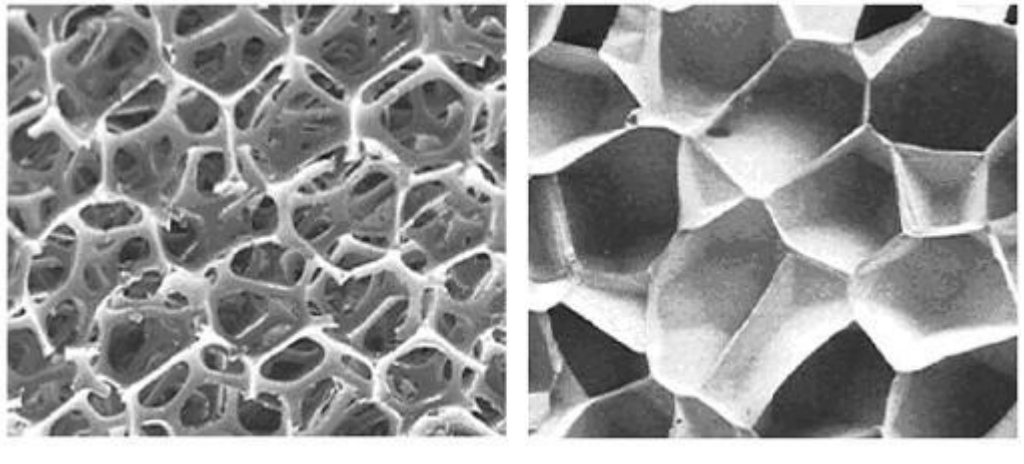
Area tecnologico-scientifica

UNIVERSITÀ DEGLI STUDI DI TRIESTE

advanced applied research

materials for energy efficiency

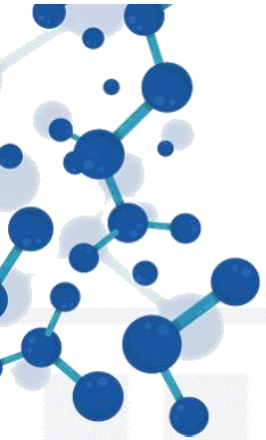
(recyclable natural composite materials
for thermal insulation

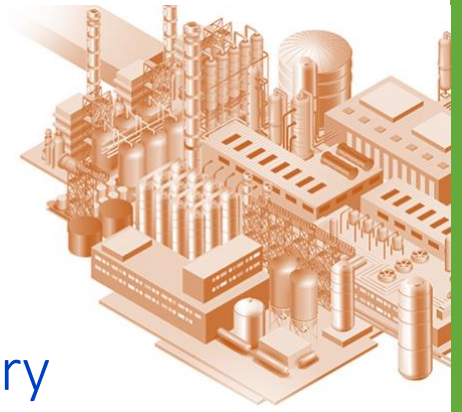


Area tecnologico-scientifica

UNIVERSITÀ DEGLI STUDI DI TRIESTE

from research to classroom





sustainable industrial chemistry

molecular simulation

chemical and biochemical reactors

spectroscopic methods of analysis

process simulation

materials for the energy transition

research

design of sustainable materials and processes

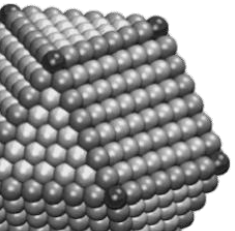
ceramic materials

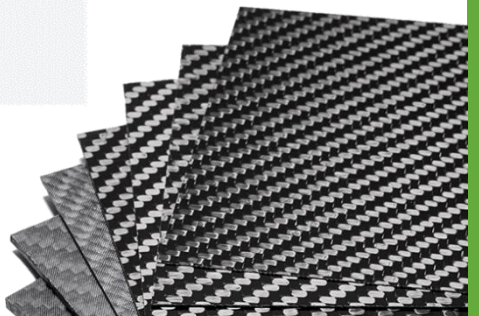
dynamics and control of chemical processes

polymers and composites

nanomaterials and biomaterials

soft materials





Area tecnologico-scientifica

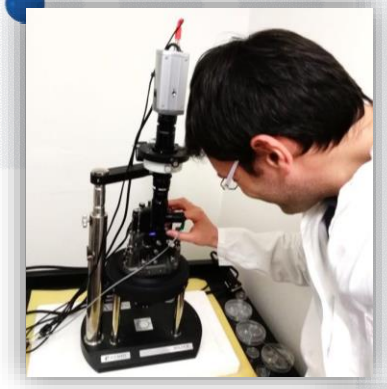
UNIVERSITÀ DEGLI STUDI DI TRIESTE

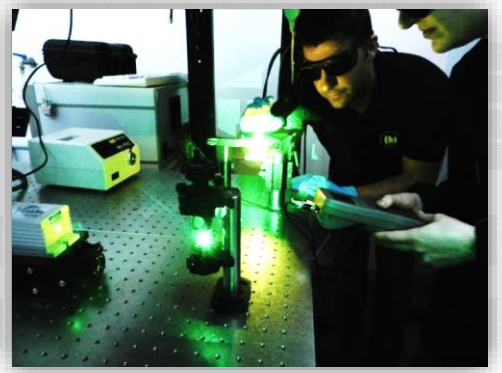
laboratories

chemistry and nanotechnology labs

materials characterization

electron microscopy





atomic force microscopy

spectroscopy and imaging

photovoltaic laboratory

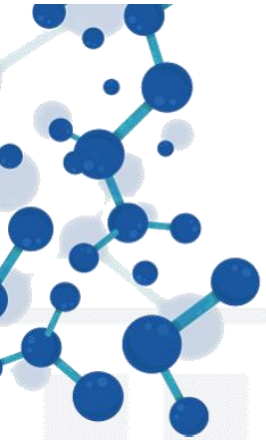
solid and liquid treatment lab

molecular simulation lab

Area tecnologico-scientifica

UNIVERSITÀ DEGLI STUDI DI TRIESTE

laboratories



ranked in the top three for labs!

chemistry and nanotechnology labs

materials characterization

electron microscopy

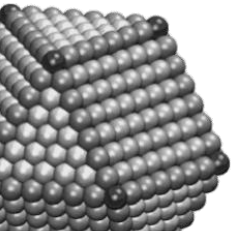
atomic force microscopy

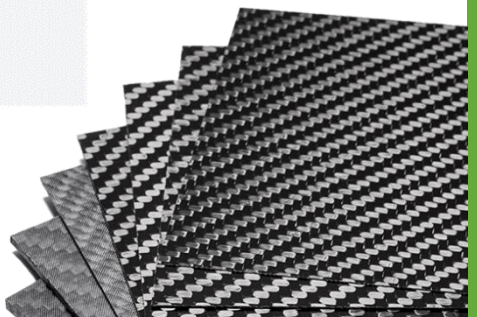
spectroscopy and imaging

photovoltaic laboratory

solid and liquid treatment lab

molecular simulation lab





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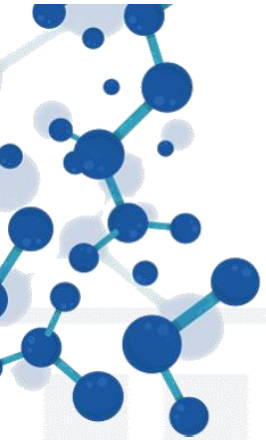
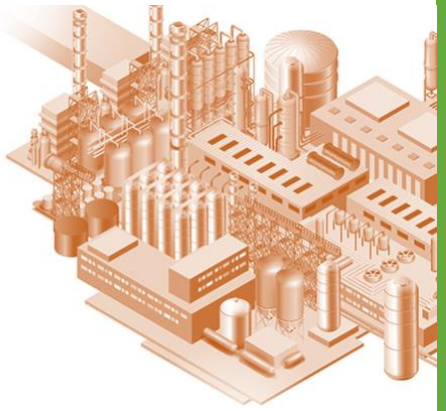
UNIVERSITÀ DEGLI STUDI DI TRIESTE

student satisfaction





quality teaching

8.2/10 *(among the best at UniTS!)*

average evaluation of the single courses

teachers for students

9/10

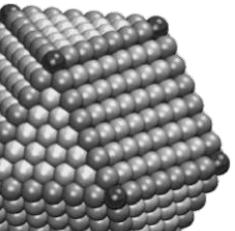
average evaluation for availability of the teachers

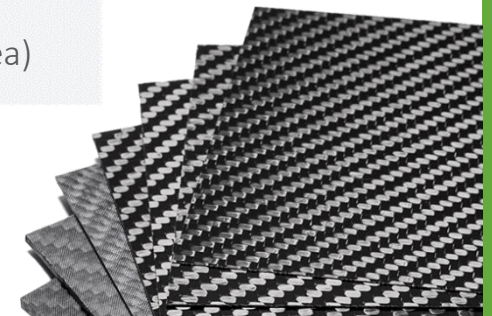
a great experience

85%

of graduated are satisfied (AlmaLaurea)

(would re-enroll in the same course)

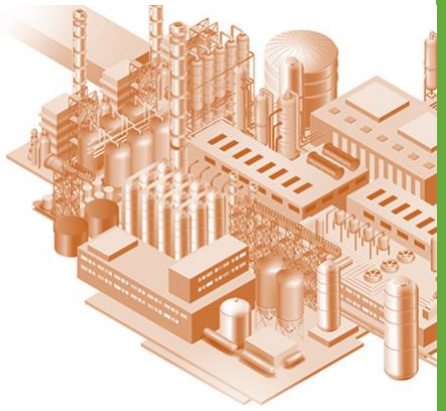


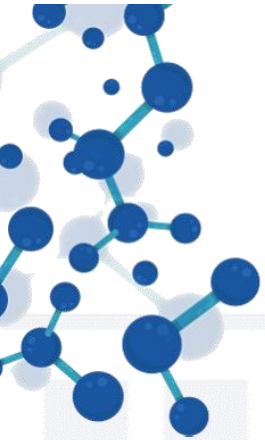


Area tecnologico-scientifica

UNIVERSITÀ DEGLI STUDI DI TRIESTE

quality teaching





from and e-mail of one ex-student that had moved to a top european university

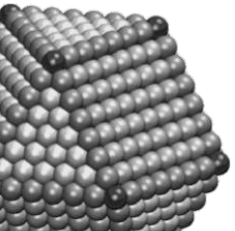
(speaking of her new university)

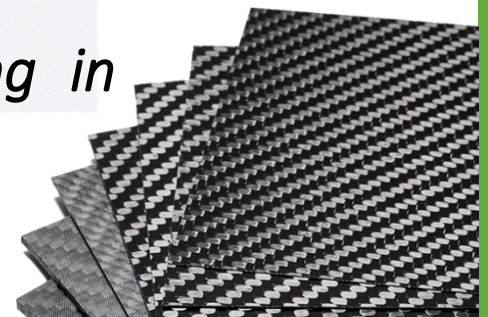
«[…] almost nobody has solid bases of math, chemistry, physics. In class you'll often see advanced topics and yet at the same time the teacher has to go back to the fundamentals. A disaster….

[…] Teachers don't teach. It's all projects, presentations, case studies, reports, practicals.

[…] Moreover, there's a lot of «technical» and very little about «science», and I don't like this…

[…] In the end: ***go Materials and Chemical Engineering in Trieste! … where you learn a lot!»***





Area tecnologico-scientifica

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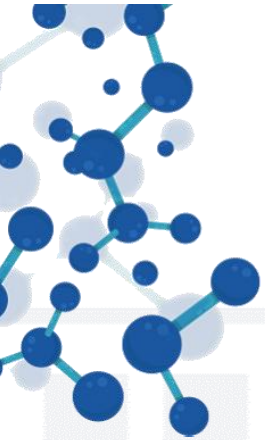
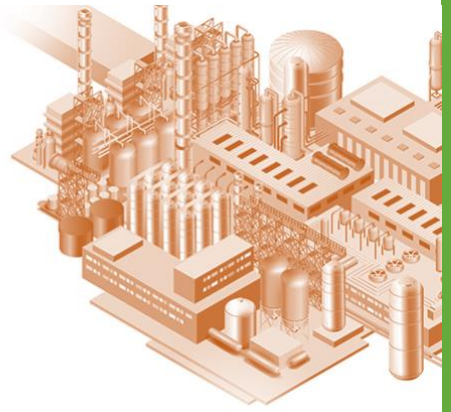
a trampoline for the World





ETH zürich

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

MAX-PLANCK-GESELLSCHAFT

UNIVERSITY OF CAMBRIDGE

UNIVERSITY OF OXFORD

TECHNISCHE UNIVERSITÄT DRESDEN

University of Colorado Boulder

USF UNIVERSITY OF SOUTH FLORIDA

UNIVERSITY of CALIFORNIA IRVINE

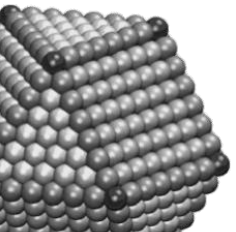
UCSB UNIVERSITY OF CALIFORNIA SANTA BARBARA

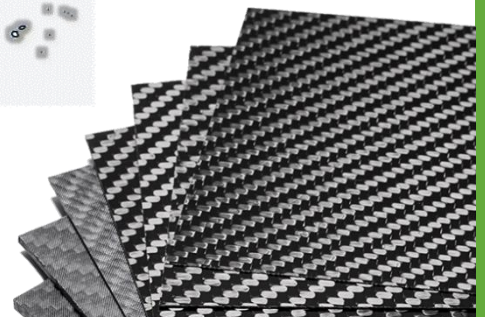
京都大学 KYOTO UNIVERSITY

서울대학교 SEOUL NATIONAL UNIVERSITY

Universidad Católica del Norte

THE UNIVERSITY OF AUCKLAND NEW ZEALAND





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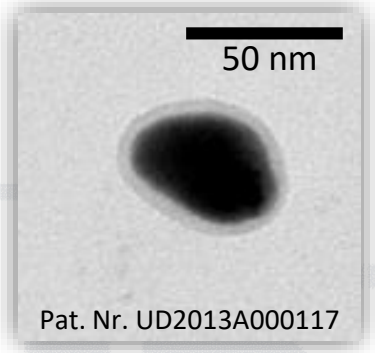
from research to enterprise



patents

10% of patents at UniTrieste

startup

from student to entrepreneur

MATERIAL CAN

GENEFINITY

MAXUN

support

teachers have entrepreneurial experience

MASTER IN COMPLEX ACTIONS
NEXT GENERATION LEADERS

successi

StartCup FVG (3 first places, 1 third place)
National Innovation Prize, 2° e 5° place
Special Prize for Innovation
European Young Entrepreneurship Award

PNI PREMIO NAZIONALE INNOVAZIONE

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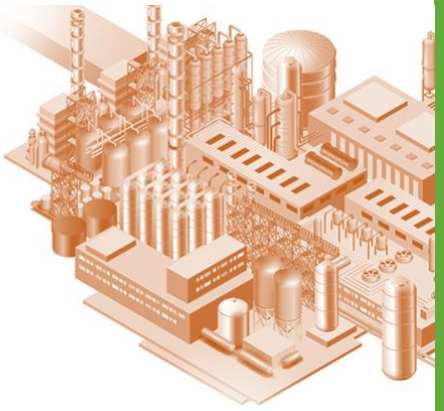
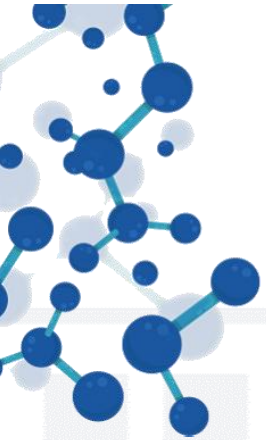


will you get a job?



quickly enter the job market

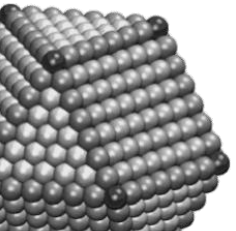
100%

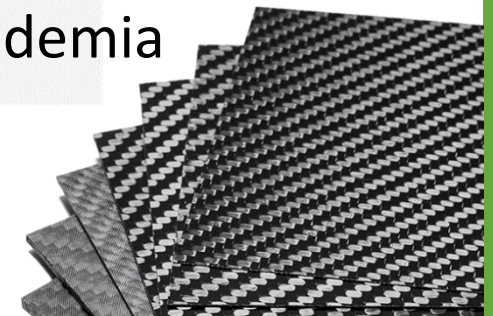
of students are employed within 3 years

an all-round professional

- ✓ can be employed in any kind of industry
- ✓ can work in research and innovation

70% industry **30%** research and academia





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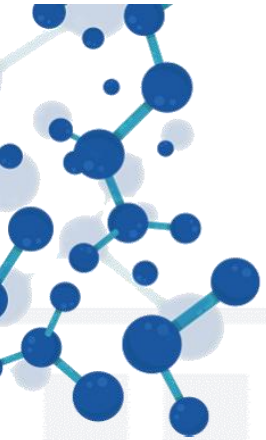
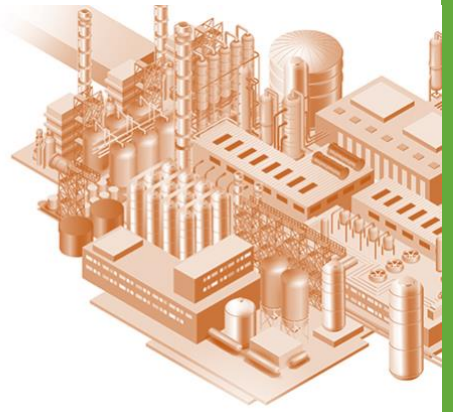
will you get a job?





ORION Valves

SAIPEM ENGINEERING ENERGY

metalpack PACKAGING SOLUTION

Lima Corporate Orthopaedic motion

eni

LUXOTTICA

BOSCH

KARTUN INNOVATIVE PLASTIC SOLUTIONS

SMS MEER SMS group

DANIELI

MAGNETI MARELLI

APPLIED MATERIALS

FINCANTIERI Cantieri Navali Italiani S.p.A.

coveme THE VALUE OF INNOVATION

WÄRTSILÄ

Electrolux

CIMOLAI

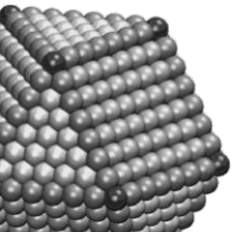
Siram by VEOLIA

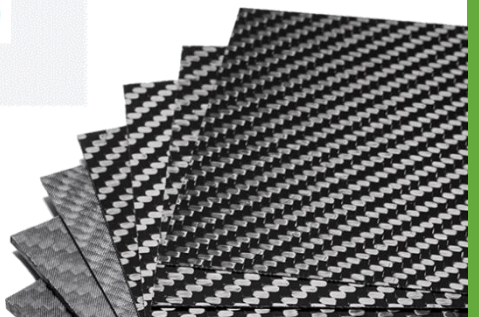
Zoppas Industries

CeramTec THE CERAMIC EXPERTS

INION

KeraTech ITALIAN STRONG EXPERTISE





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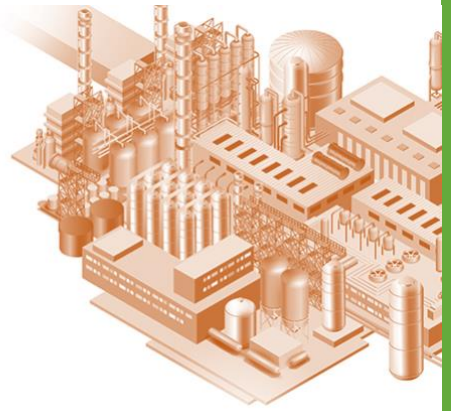
will you get a job?

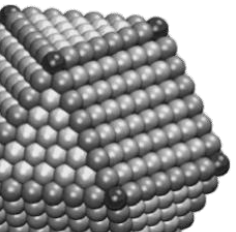
education that pays!

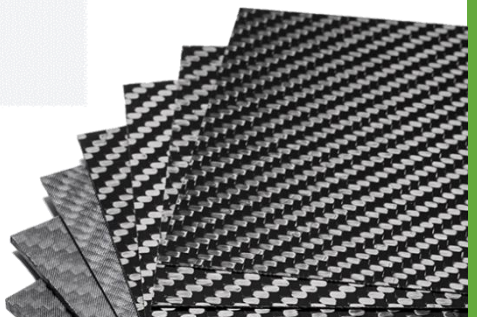


25-34 anni | 35-44 anni | **45-54 anni**

(annual salary)

Ingegneria Chimica e dei Materiali	63.579
Ingegneria Gestionale	59.651
Scienze giuridiche	59.481
Scienze economiche	59.045
Ingegneria Meccanica, Navale, Aeronautica e Aerospaziale	57.904
Scienze chimiche	57.096
Scienze mediche	55.372
Scienze statistiche	54.414
Scienze biologiche	53.113
Scienze politiche e sociali	52.432
TOTALE LAUREATI	**50.590**
Ingegneria, architettura e scienze delle costruzioni	50.104
Ingegneria civile e Architettura	48.114
Ingegneria Informatica, Elettronica e delle Telecomunicazioni	43.738
Scienze fisiche	42.653
Lingue e letterature straniere moderne	42.602
Scienze storiche e filosofiche	41.206
Scienze matematiche e	40.124





Area tecnologico-scientifica

UNIVERSITÀ DEGLI STUDI DI TRIESTE

study program

- entirely renewed
- aligned with global and european strategies
- flexible

- *Design your own study plan around one of **three hot topics***
- *Focus on either **chemical engineering** or **materials engineering***

Industrial Technologies

Materials

Polymers and composites
Molecular simulation
Impiego industriale dell'energia
Ceramic materials
Metals and fracture mechanics
Tecnologia delle energie rinnovabili
Sustainable Industrial Chemistry
Design for sustainability of products and processes
Experimental design and data analysis
Strategic and critical materials
Materials Characterization
Nano&Bio Technologies
Chemical and biochemical reaction engineering
Process dynamics and control
Process design and optimization

Chemical Engineering

Nano&Bio Technologies

Materials

Molecular simulation
Soft Materials and Drug Delivery
Cinetica enzimatica
Molecular biology for engineering
Advanced simulation for nano-biotech
Laboratorio Sperimentale nano-bio
Biomaterials, artificial organs, prosthesis
Green nanotechnologies, natural and bioinspired materials
Advanced materials science
Polymers and composites
Experimental design and data analysis
Nano&Bio Technologies
Materials Characterization
Chemical and biochemical reaction engineering
Sustainable Industrial Chemistry
Process dynamics and control
Process design and optimization

Chemical Engineering

Technologies for Sustainability

Materials

Molecular simulation
Polymers and composites
Impiego industriale dell'energia
Strategic and critical materials
Materials and systems for the energy transition
Tecnologia delle energie rinnovabili
Experimental design and data analysis
Design for sustainability of products and processes
Sustainable Industrial Chemistry
Physics of Materials
Ceramic Materials
Metals and fracture mechanics
Materials Characterization
Chemical and biochemical reaction engineering
Process dynamics and control
Process design and optimization

Chemical Engineering

Details: corsi.units.it/in17/ingegneria-processo-materiali

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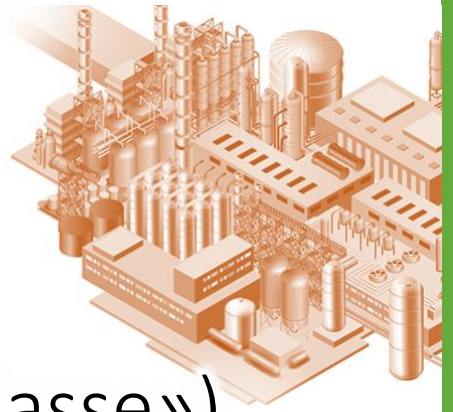
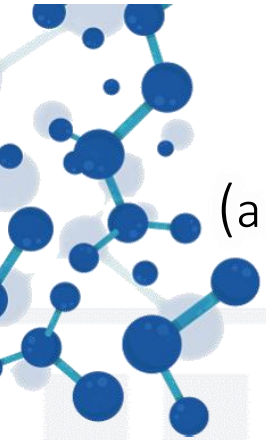


general information



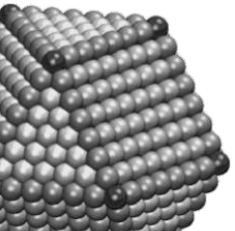
The course is an interclass degree («laurea interclasse»)

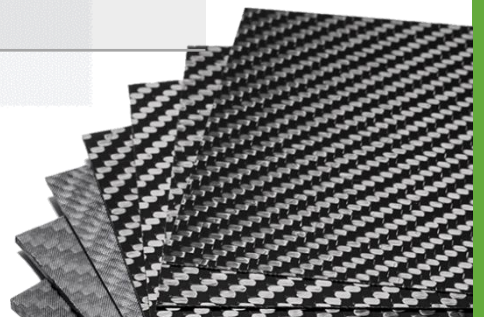
(a merge of the MS in Chemical Engineering LM-22 and the MS in Materials Engineering LM-53)

Before the beginning of the 2° year, the student is required to choose the «class» of his/her degree:
either «Ingegneria Chimica (LM-22)» or «Ingegneria dei materiali (LM-53)»

structure	
90 credits	Characterizing courses (TAF B) or complentary («affini») (TAF C)
15 credits	Elective courses
3 credits	Internship
12 credits	Thesis project
120 credits	**TOTAL**

B2 level of English or equivalent is required





Area tecnologico-scientifica

CONTACT INFO

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040 558 7300

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Detailed information

corsi.units.it/in17/ingegneria-processo-materiali
Vanni Lughi - vlughi@units.it

orientamento

orientamento@units.it
040 3473787

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Un mare di ragioni per studiare **a Trieste**