

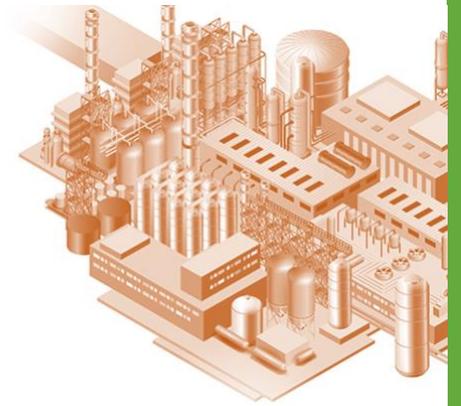


**MATERIALS AND CHEMICAL ENGINEERING FOR NANO,
BIO, AND SUSTAINABLE TECHNOLOGIES**

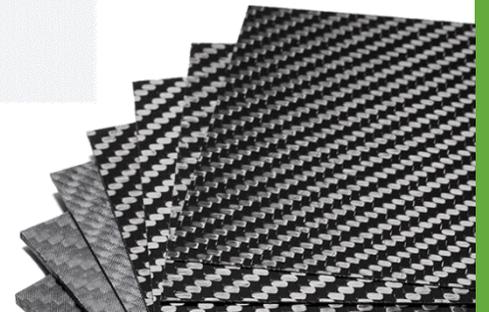
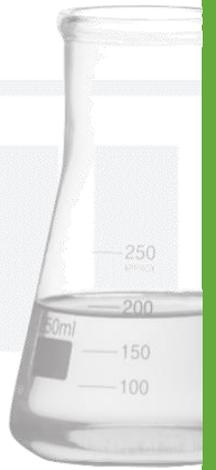
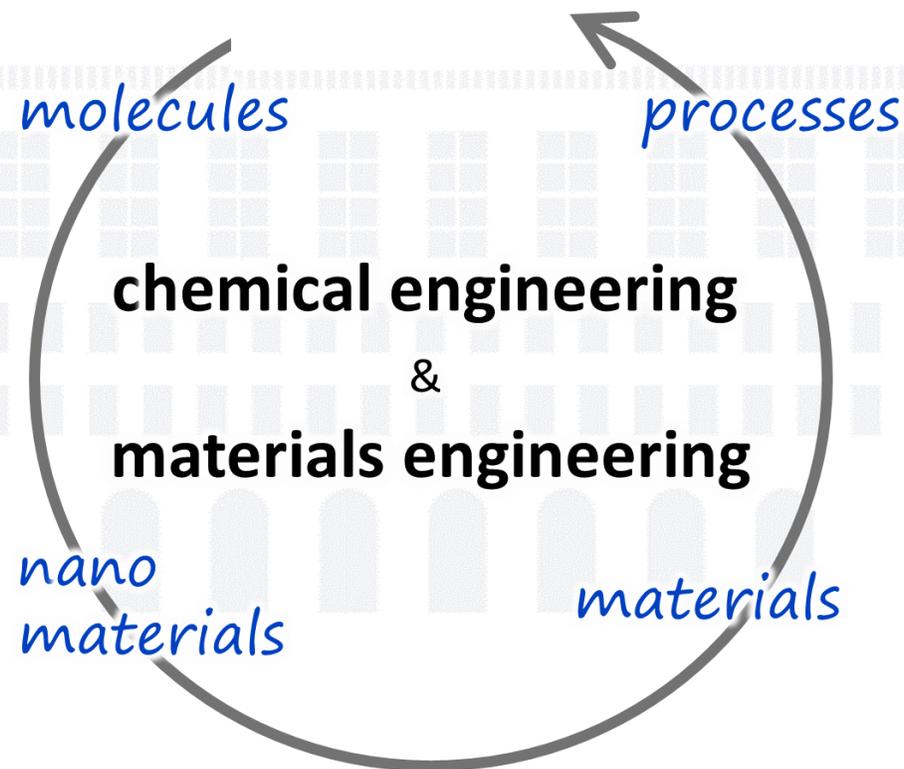


**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**

Master of Science Degree («Laurea Magistrale») in
«Materials and Chemical Engineering
for Nano, Bio, and Sustainable Technologies»

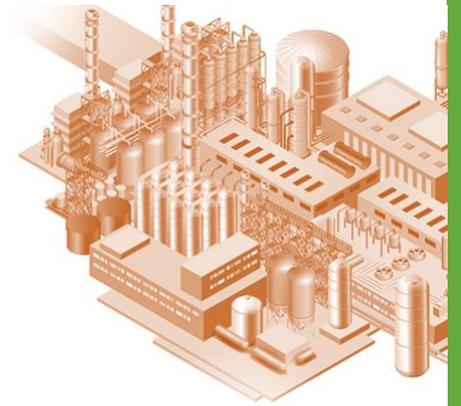


a «multiscale» course





materials and processes are cornerstones of innovation



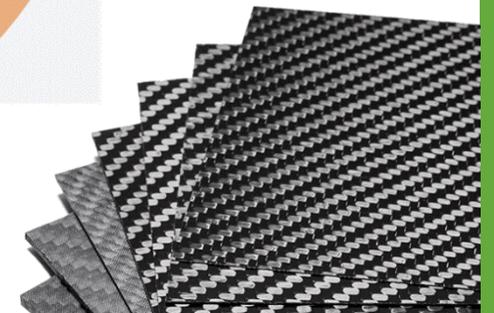
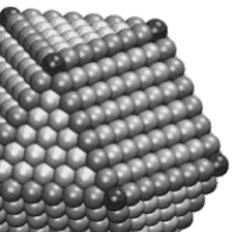
Key Enabling Technologies

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



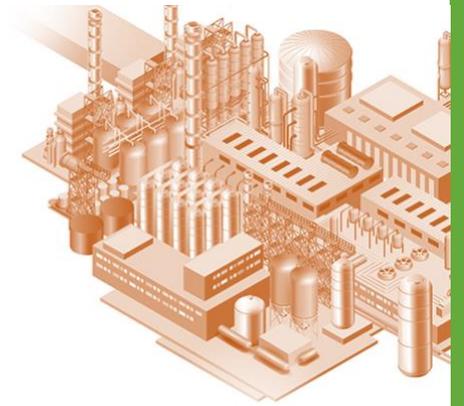
Emerging Disruptive Technologies

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

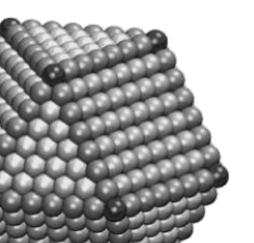
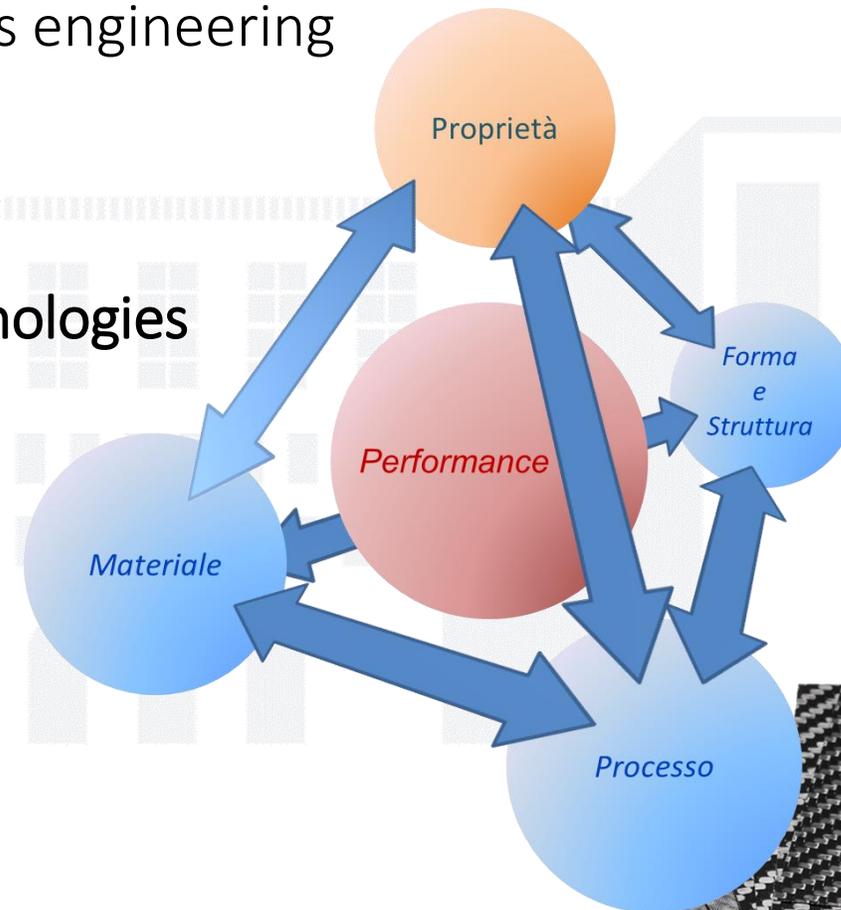




objectives



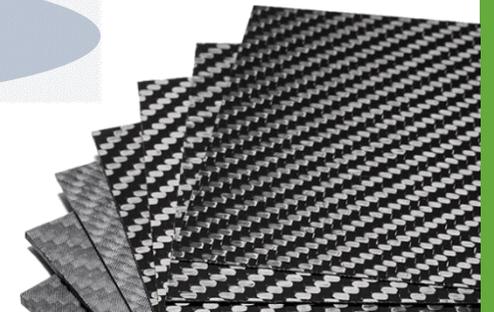
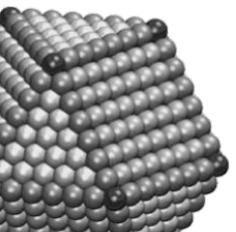
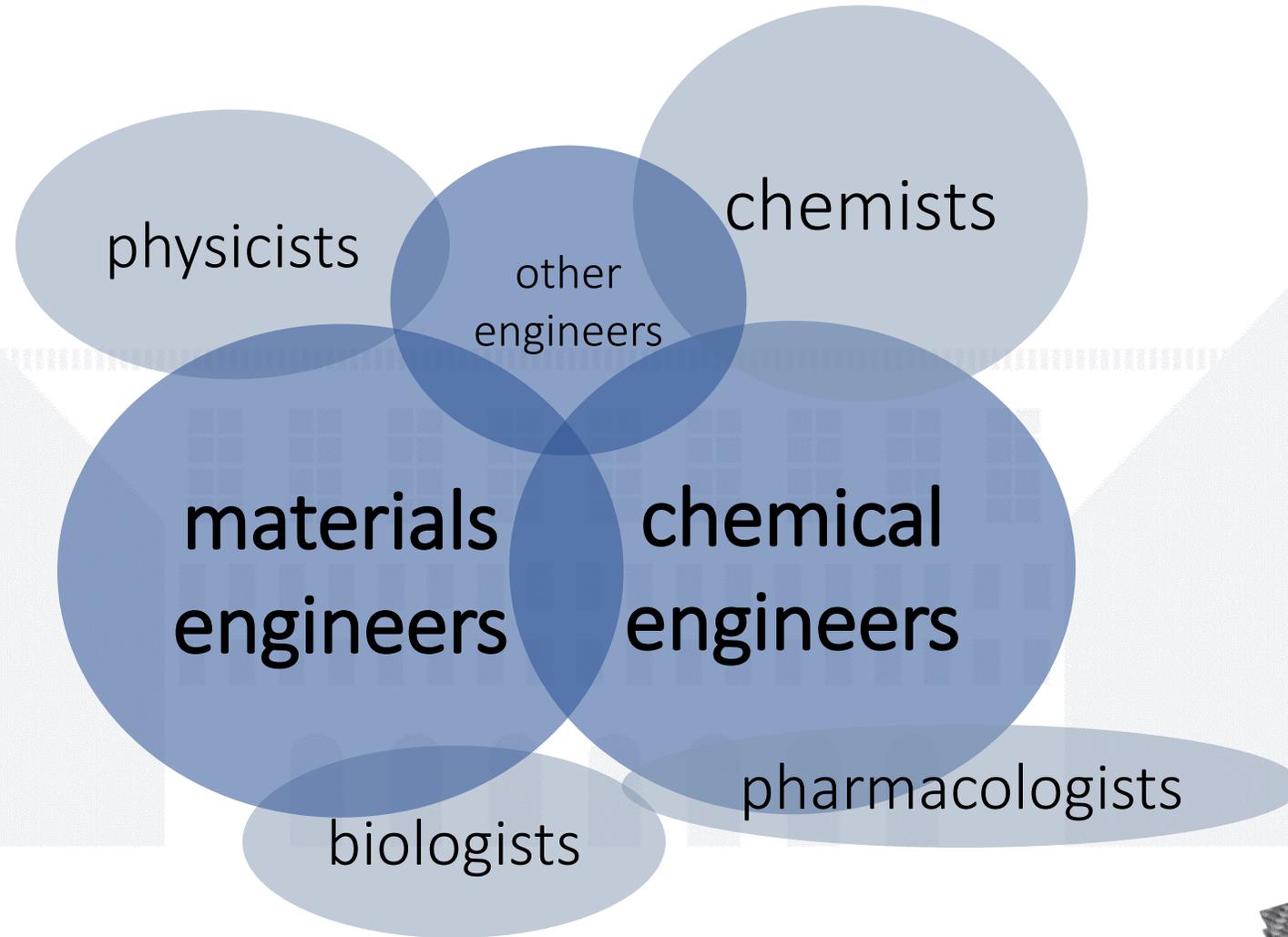
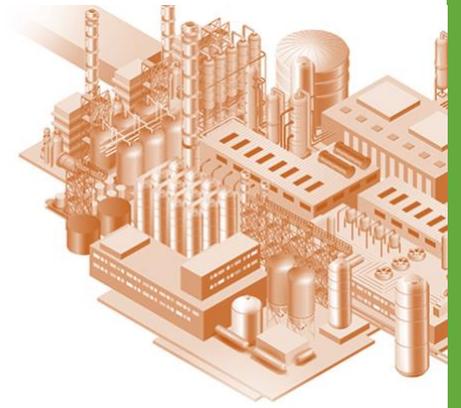
- solid fundamentals in physics and chemistry
- advanced training in materials engineering and chemical engineering
- focus on hot topics:
 - ✓ Advanced industrial technologies
 - ✓ Nanotechnology
 - ✓ Biotechnology
 - ✓ Sustainability





**UNIVERSITÀ
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DI TRIESTE**

a multidisciplinary environment

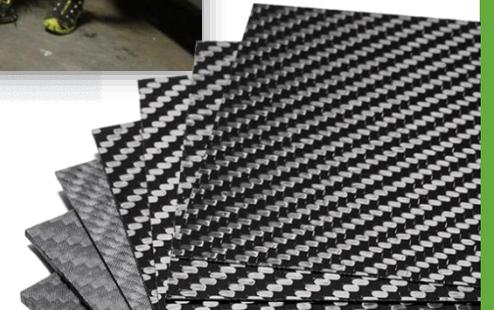
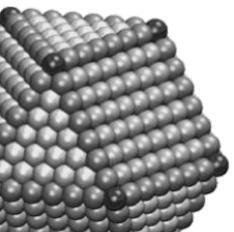
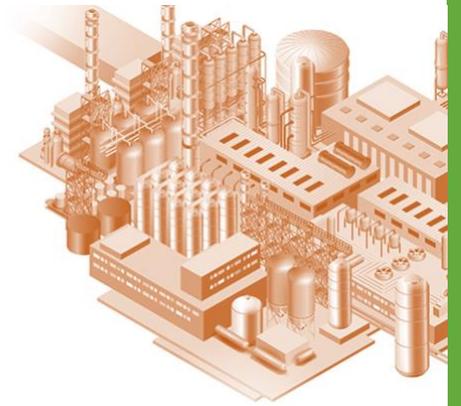




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...and relaxed!

a multidisciplinary environment





climb_ING
Val Rosandra



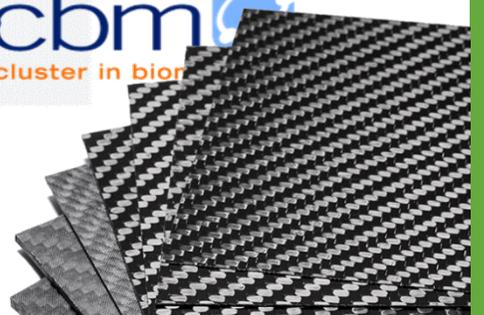
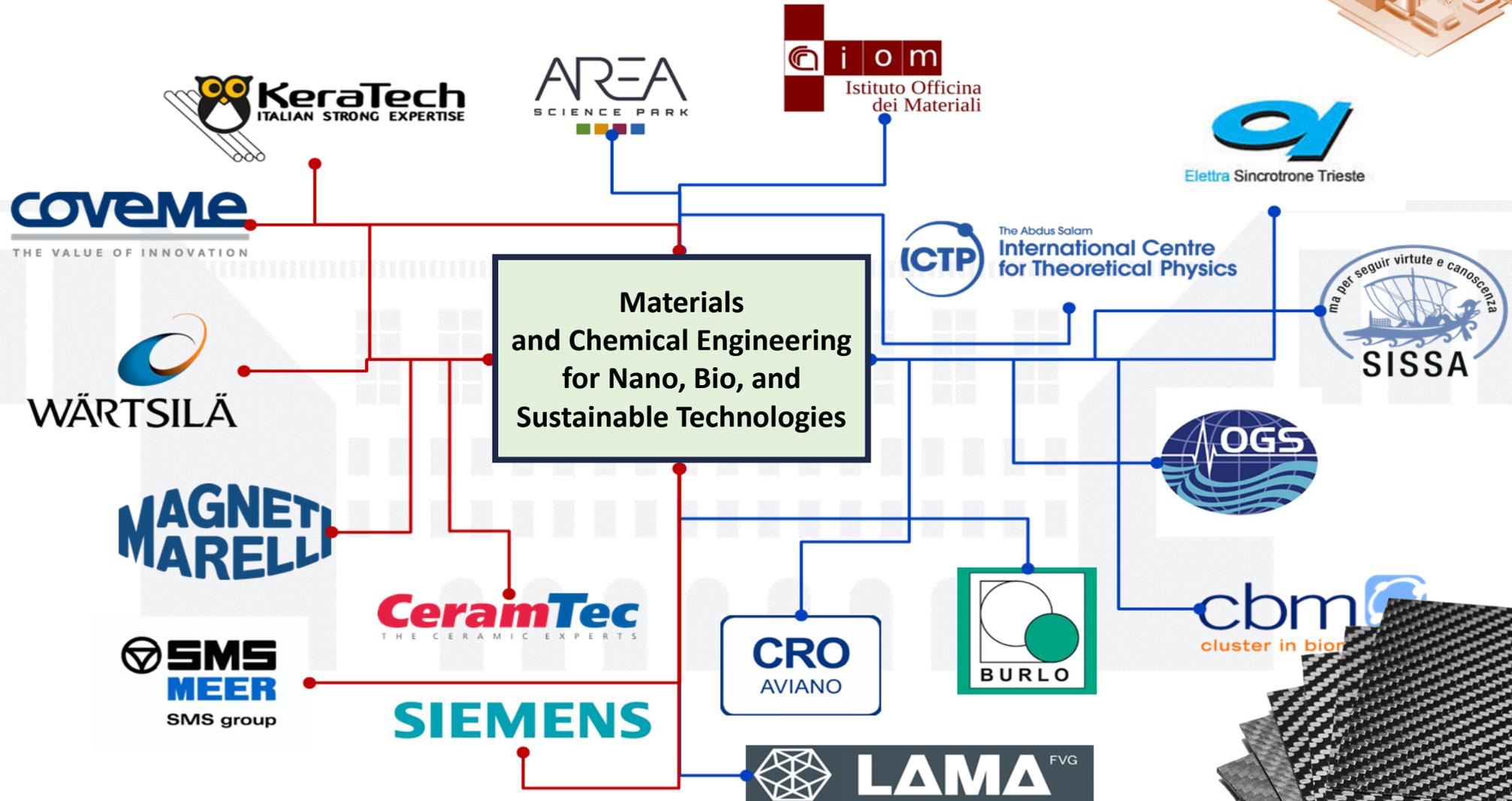
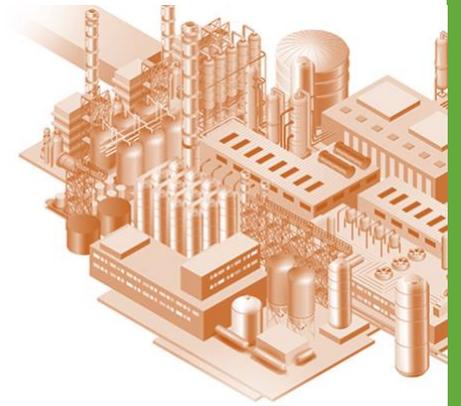
raft_ING - Isonzo river



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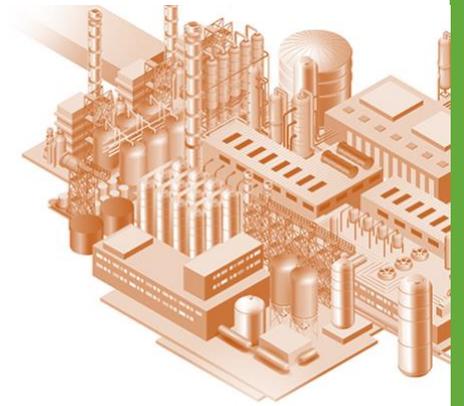
a network of collaborations

- knowledge transfer with companies and institutions -





advanced applied research



biomedical applications *of materials and processes*

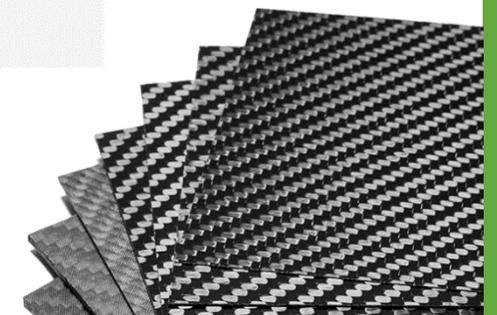
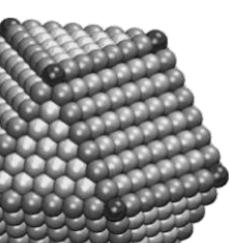


diagnostics

prosthetics

drugs &
drug
delivery

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

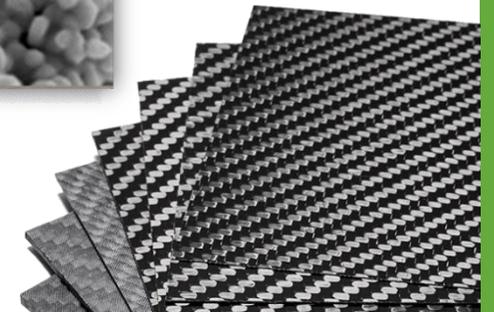
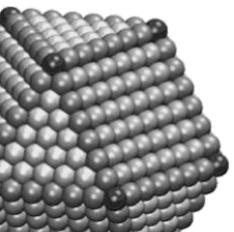
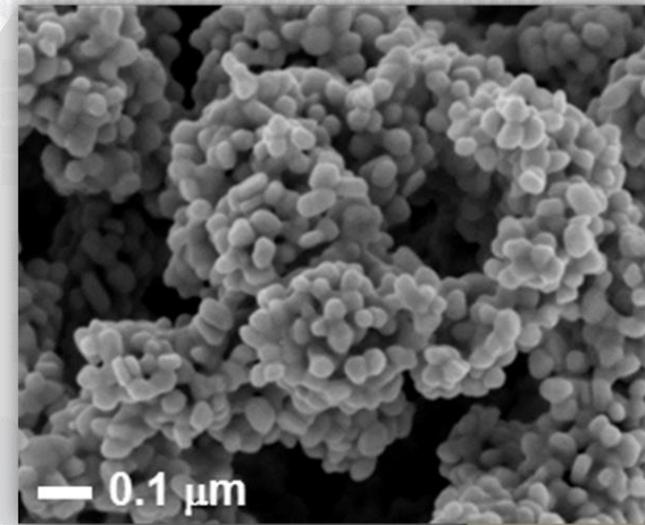
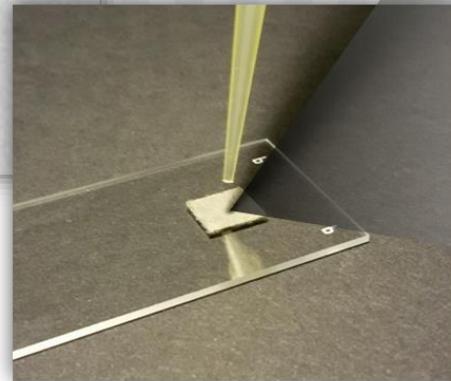
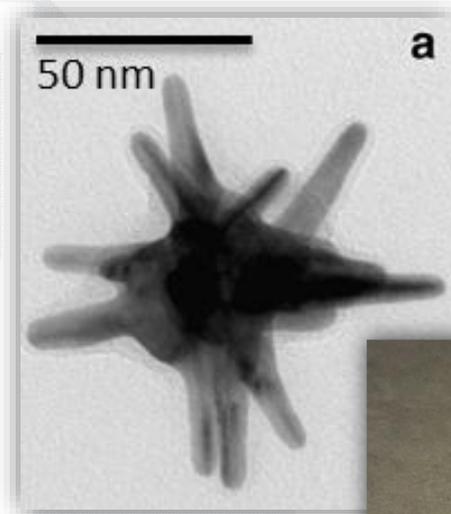
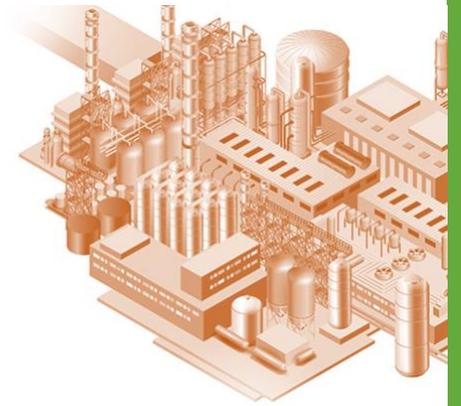




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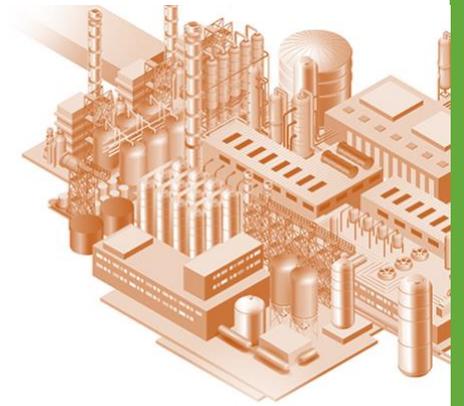
advanced applied research

*nanotechnology
for sensors*

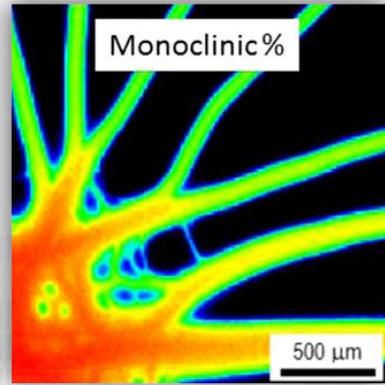




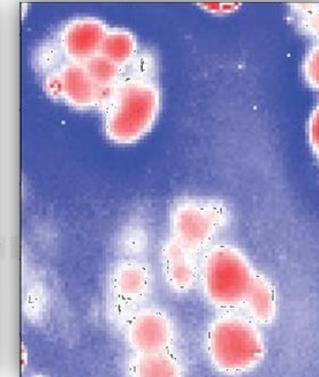
advanced applied research *(bio)photonics*



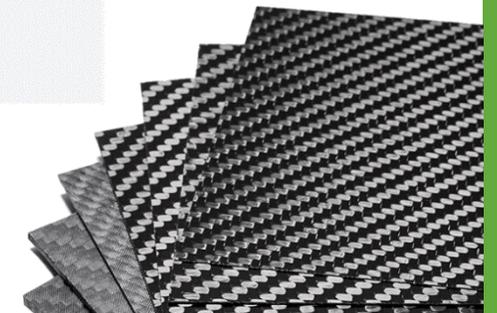
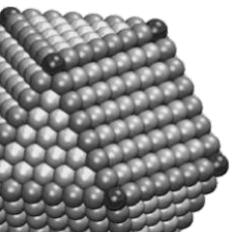
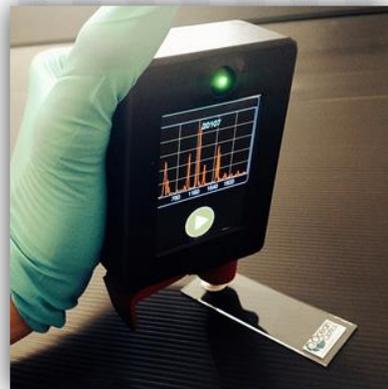
(materials imaging for prosthetics)



(imaging of biological tissues)



(non-invasive diagnostics)

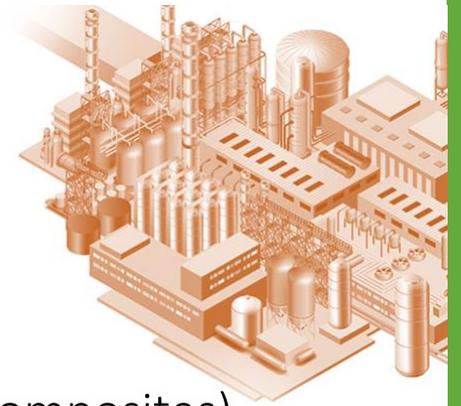




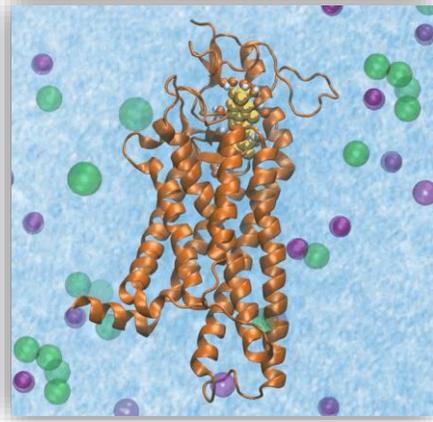
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advanced applied research

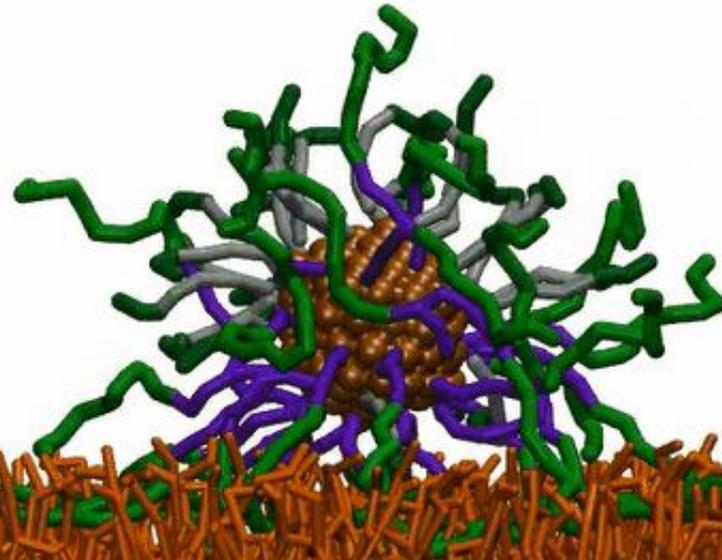
multiscale simulation



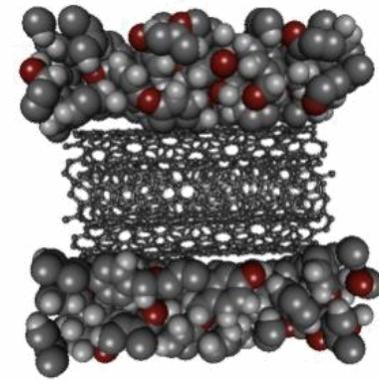
(drug mechanisms)



(nano-bio interaction)



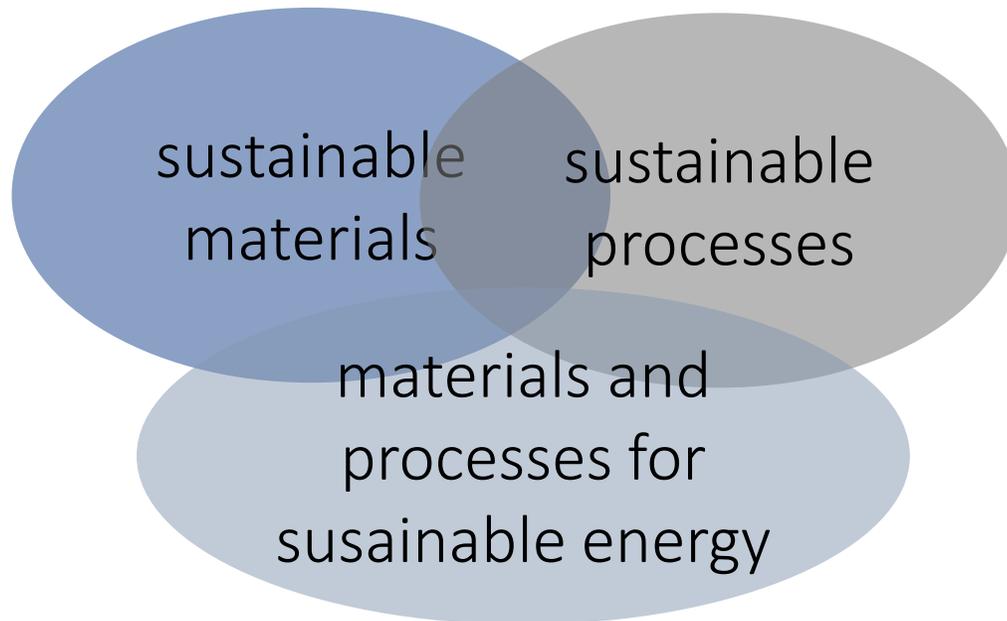
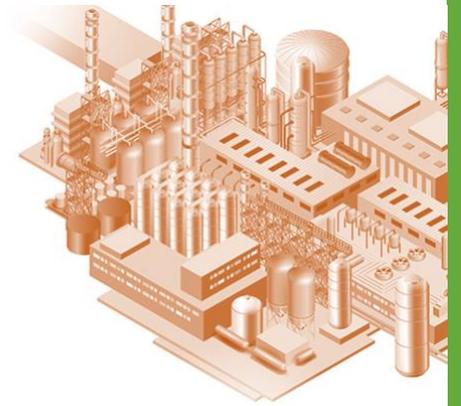
(nanocomposites)



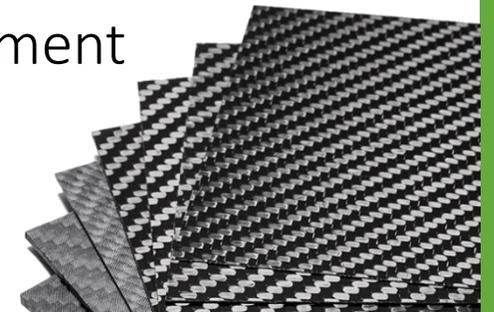


advanced applied research

materials and processes for energy and environment



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

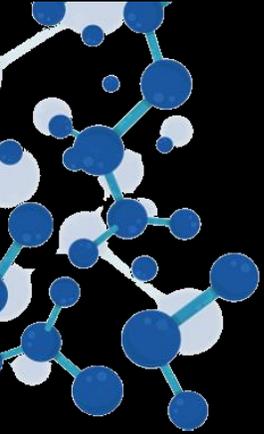
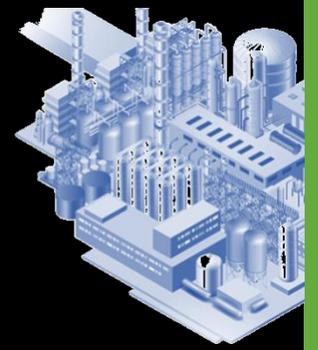




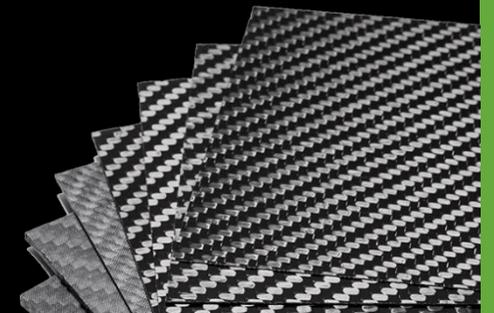
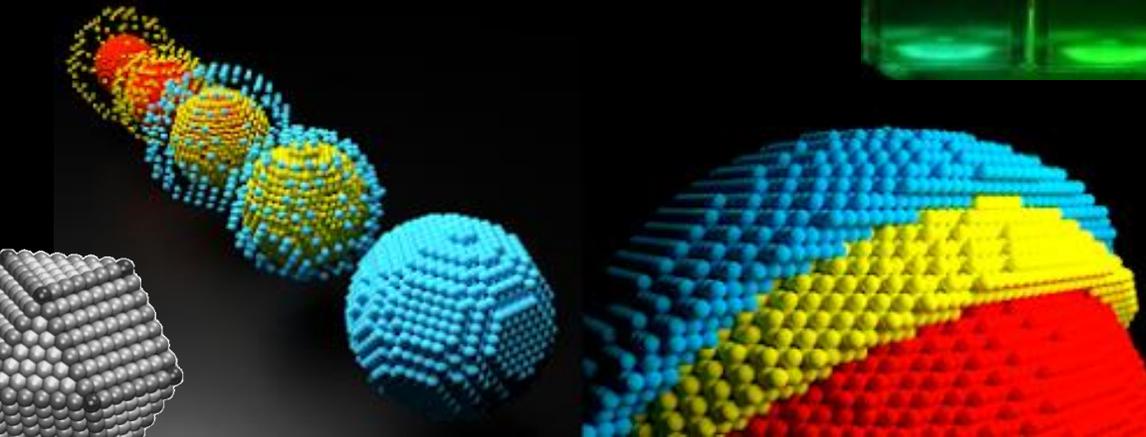
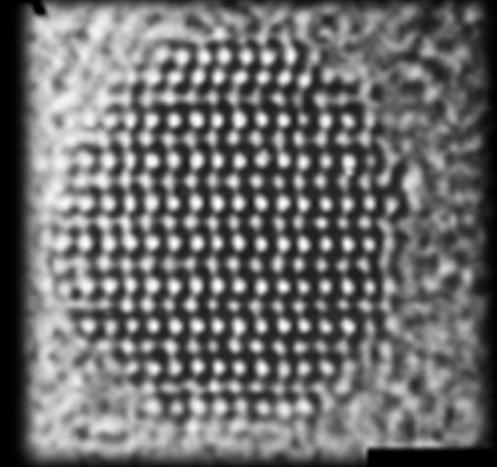
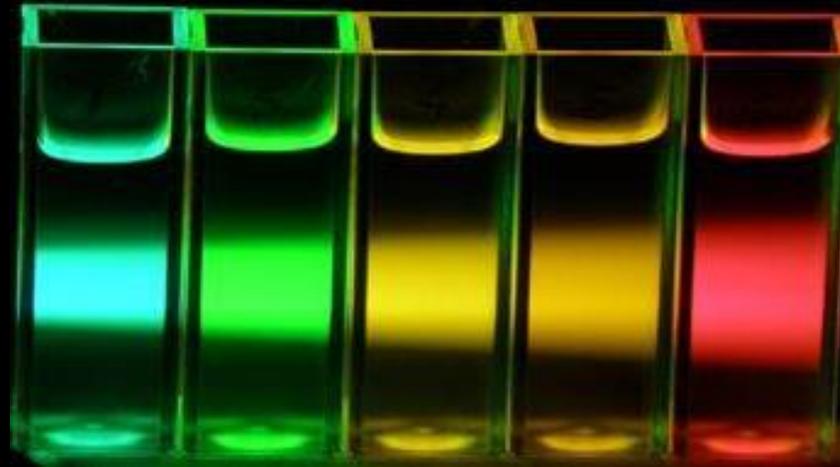
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advanced applied research

*nanotechnology for
sustainable energy*



(nanostructures for
photovoltaics and
photocatalysis)



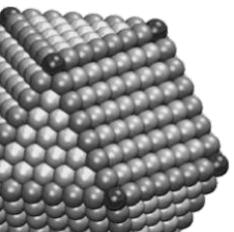
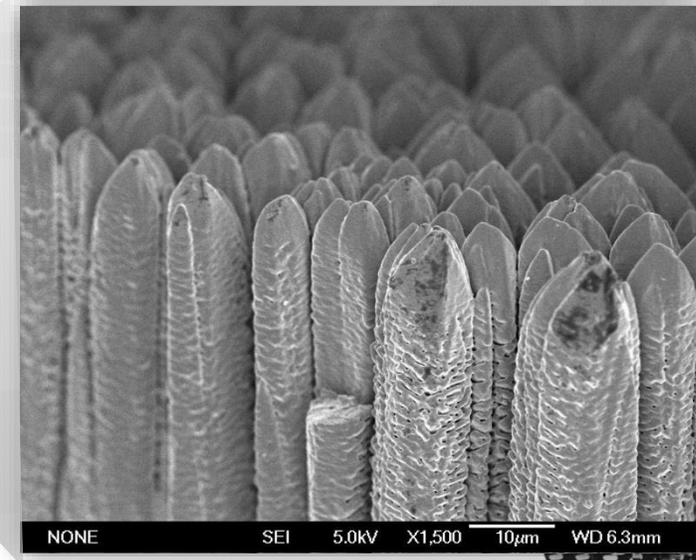
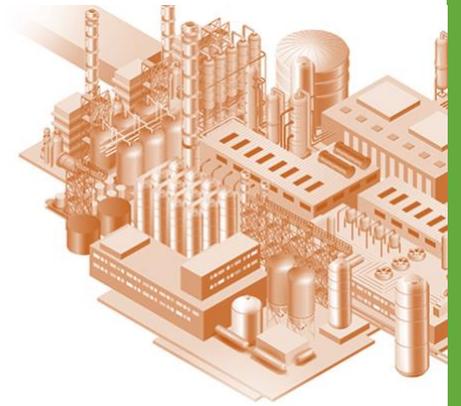


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advanced applied research

*materials for sustainable
energy production*

(ceramic materials for thermal barrier coatings)

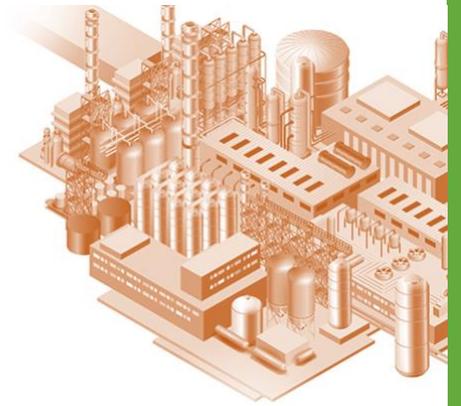




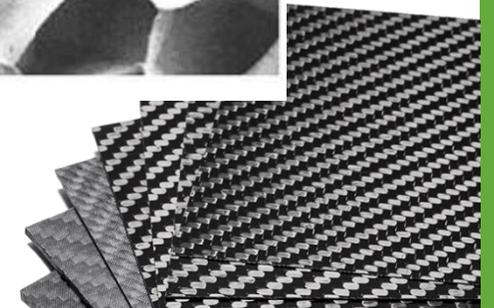
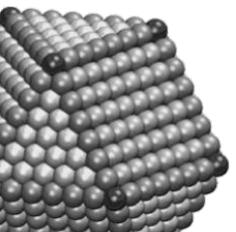
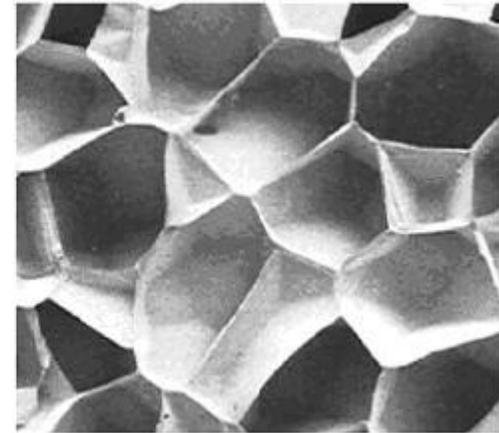
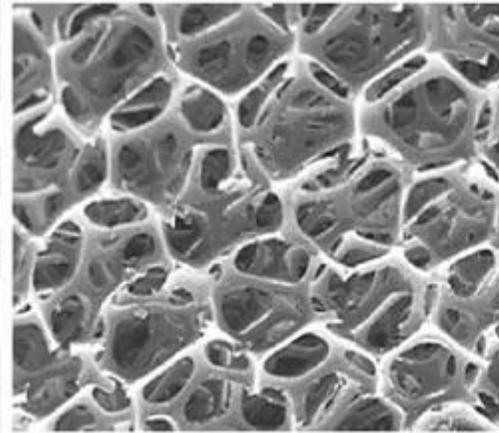
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advanced applied research

materials for energy efficiency

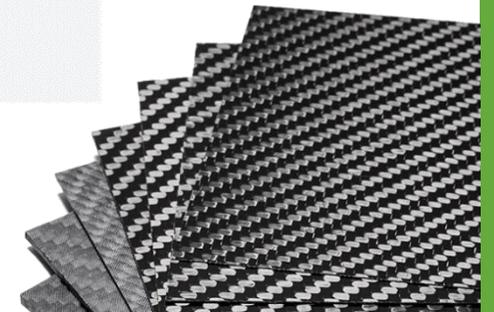
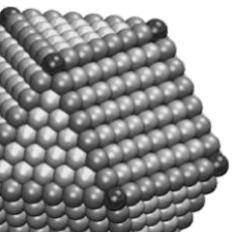
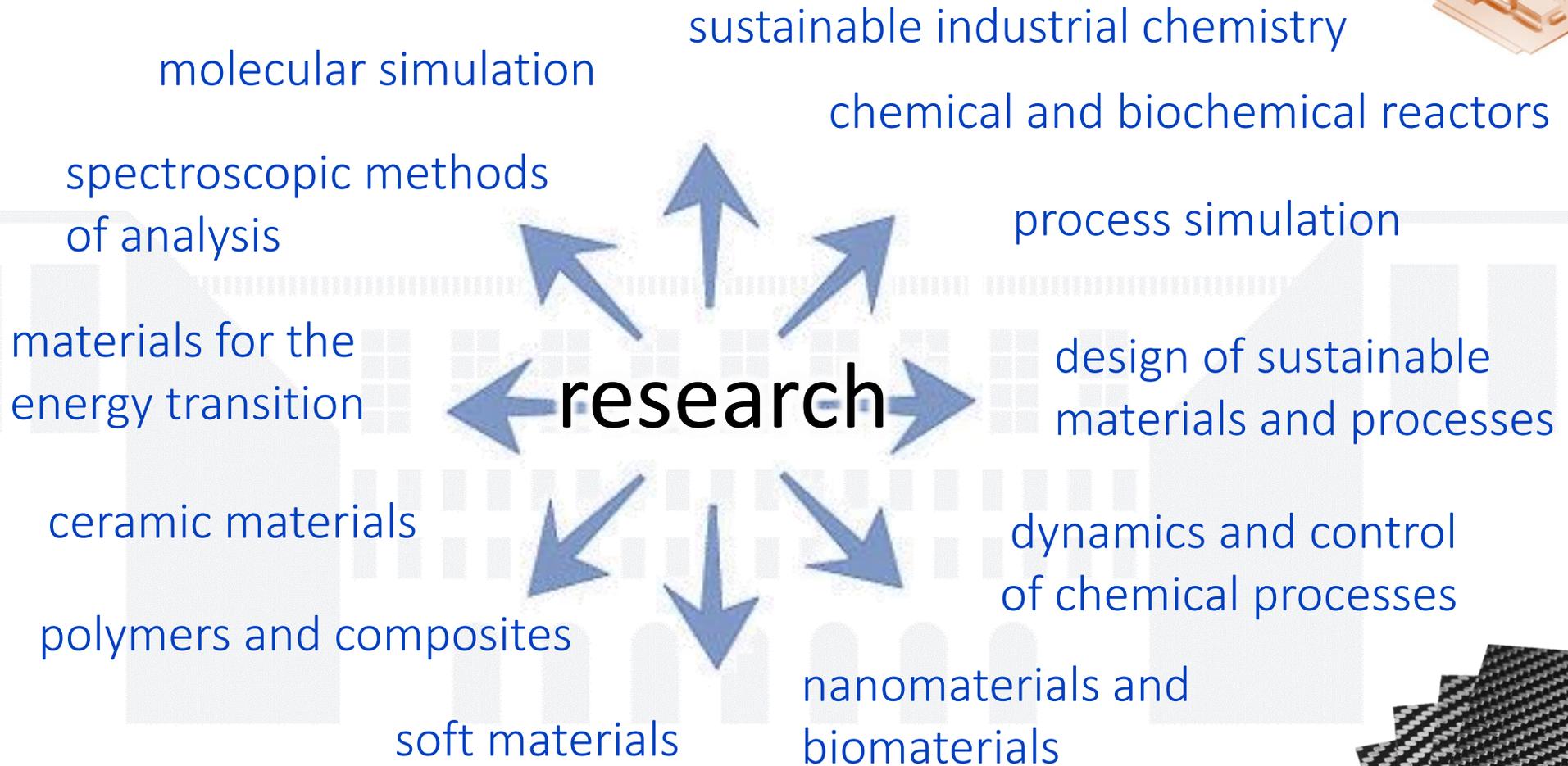


(recyclable natural composite materials
for thermal insulation)





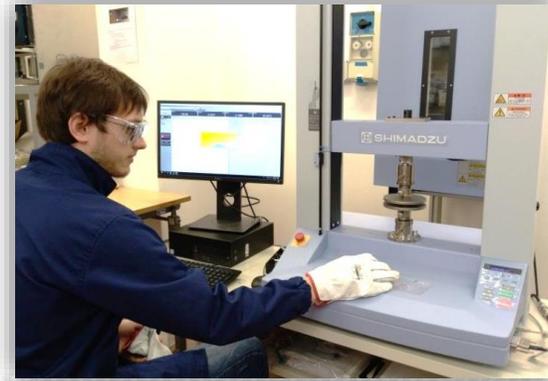
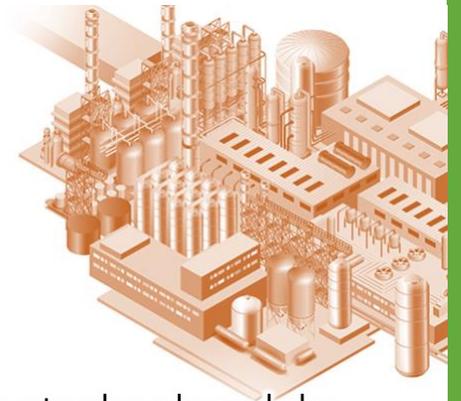
from research to classroom





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laboratories



chemistry and nanotechnology labs

materials characterization

electron microscopy

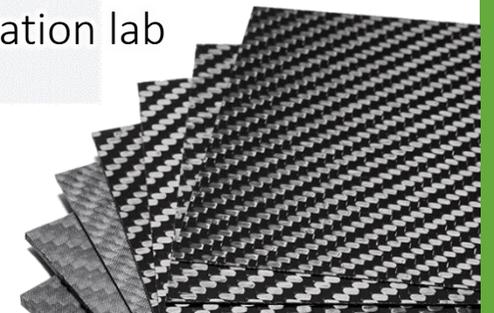
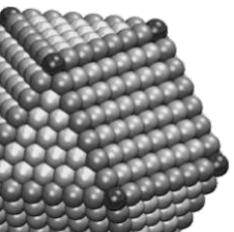
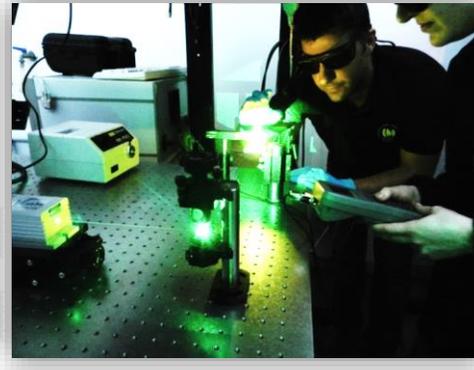
atomic force microscopy

spectroscopy and imaging

photovoltaic laboratory

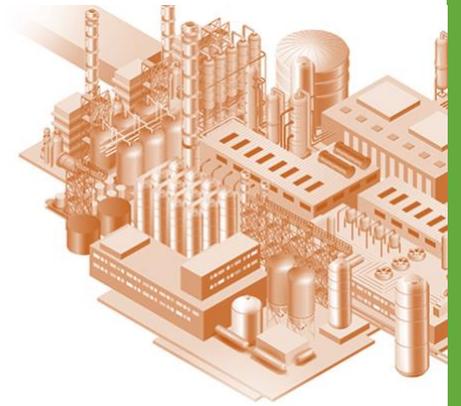
solid and liquid treatment lab

molecular simulation lab





laboratories



*ranked in the
top three
for labs!*

chemistry and nanotechnology labs

materials characterization

electron microscopy

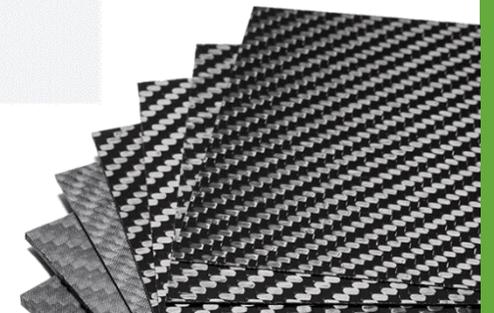
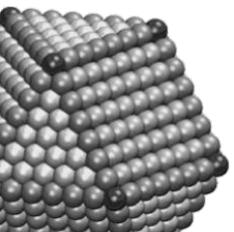
atomic force microscopy

spectroscopy and imaging

photovoltaic laboratory

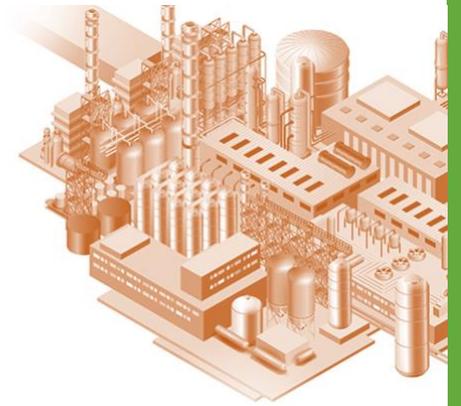
solid and liquid treatment lab

molecular simulation lab





student satisfaction



*quality
teaching*

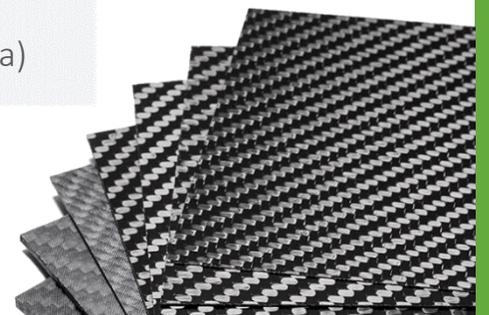
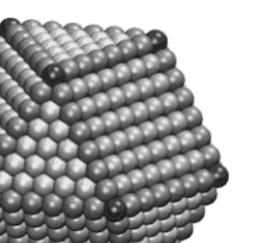
8.2/10 *(among the best at UniTS!)*
average evaluation of the single courses

*teachers for
students*

9/10
average evaluation for availability of the teachers

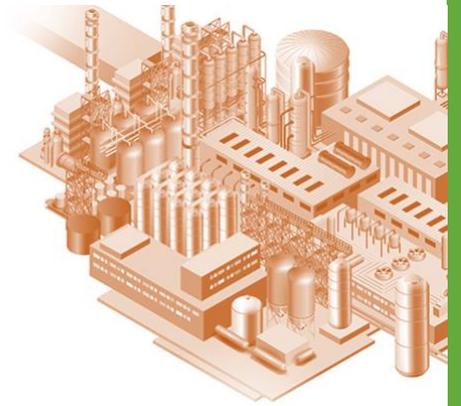
*a great
experience*

85%
of graduated are satisfied (AlmaLaurea)
(would re-enroll in the same course)





quality teaching



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

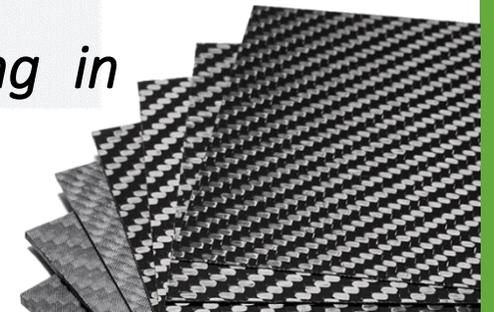
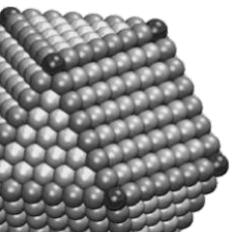
(speaking of her new university)

«[...] 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...

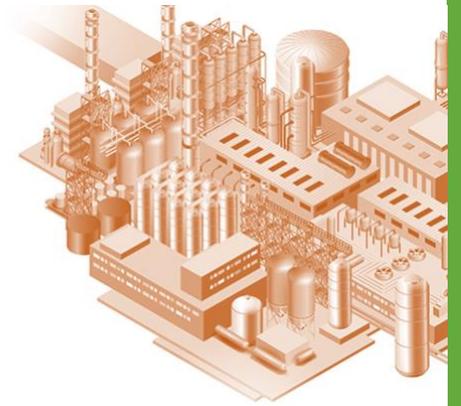
*[...] In the end: go **Materials and Chemical Engineering in Trieste!** ... where you learn a lot!»*





UNIVERSITÀ
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DI TRIESTE

a trampoline for the World



ETH zürich



MAX-PLANCK-GESELLSCHAFT



University of Colorado
Boulder



UNIVERSITY of
CALIFORNIA
IRVINE



UNIVERSITY OF CALIFORNIA
SANTA BARBARA



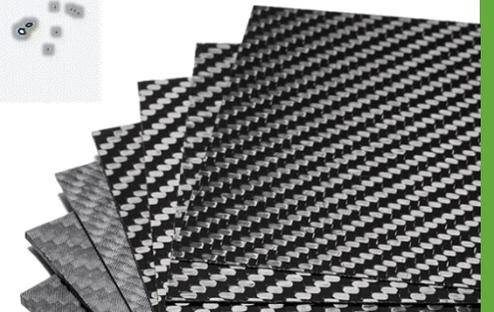
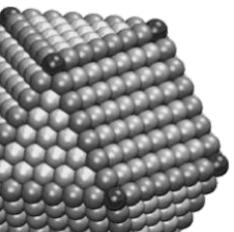
京都大学
KYOTO UNIVERSITY



서울대학교
SEOUL NATIONAL UNIVERSITY

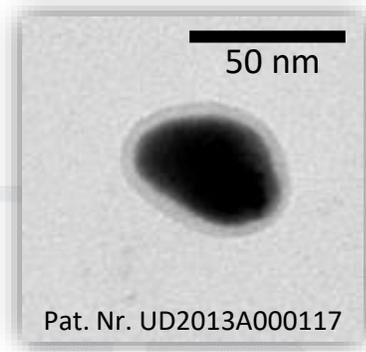
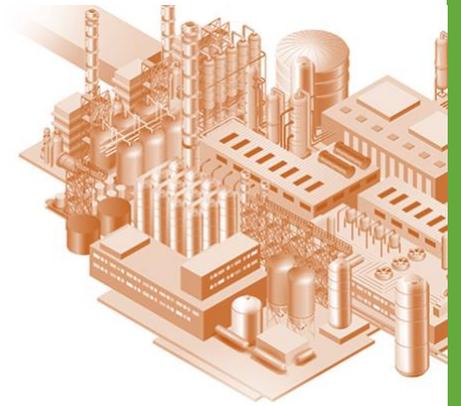


Universidad
Católica del Norte





from research to enterprise



patents

10% of
patents at
UniTrieste



startup

from student
to entrepreneur



MASTER
IN COMPLEX
ACTIONS

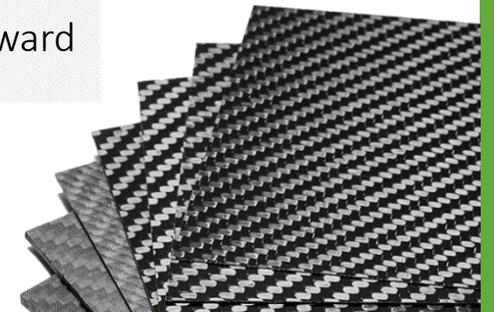
NEXT GENERATION LEADERS

support

teachers have
entrepreneurial
experience

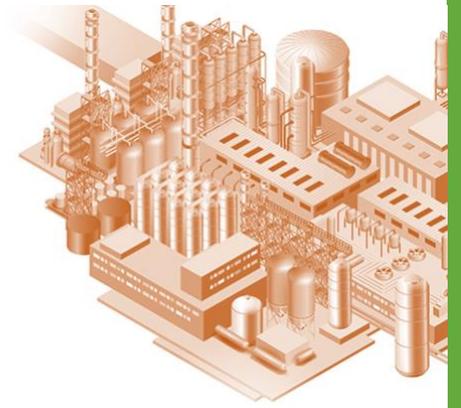
successi

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





will you get a job?



*quickly enter
the job market*

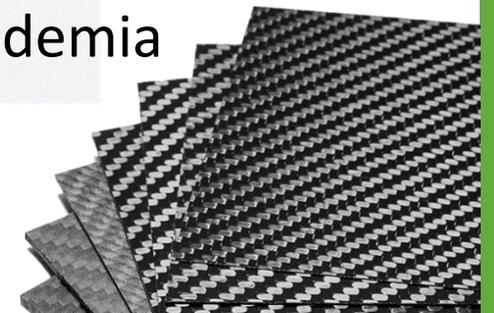
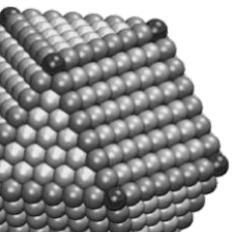
100%

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

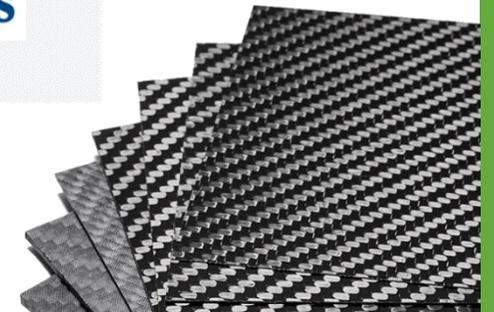
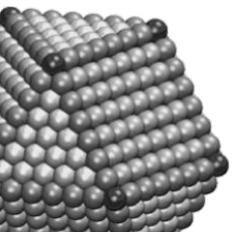
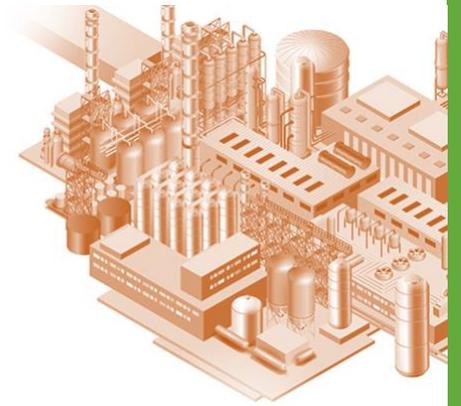
70% industry **30%** research and academia





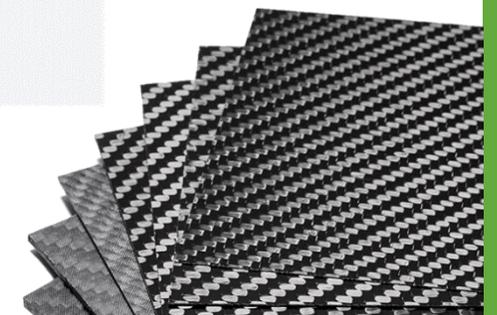
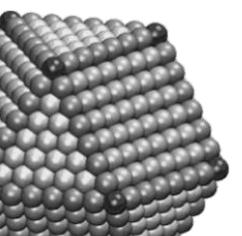
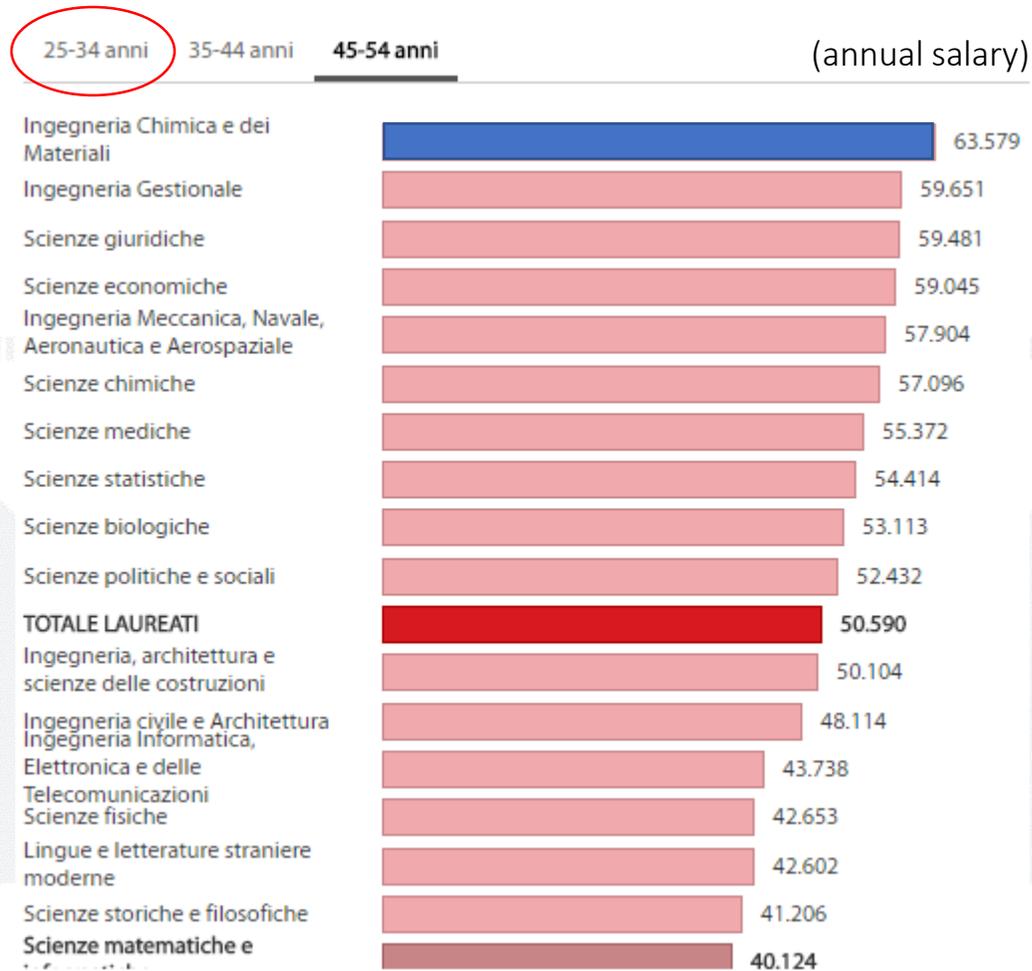
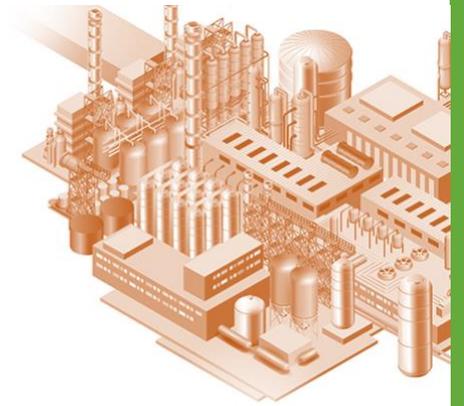
UNIVERSITÀ
DEGLI STUDI
DI TRIESTE

will you get a job?



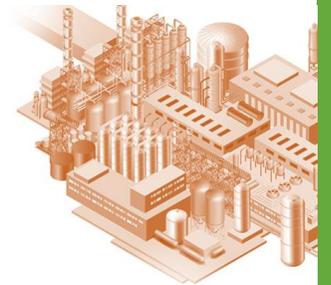


will you get a job? *education that pays!*





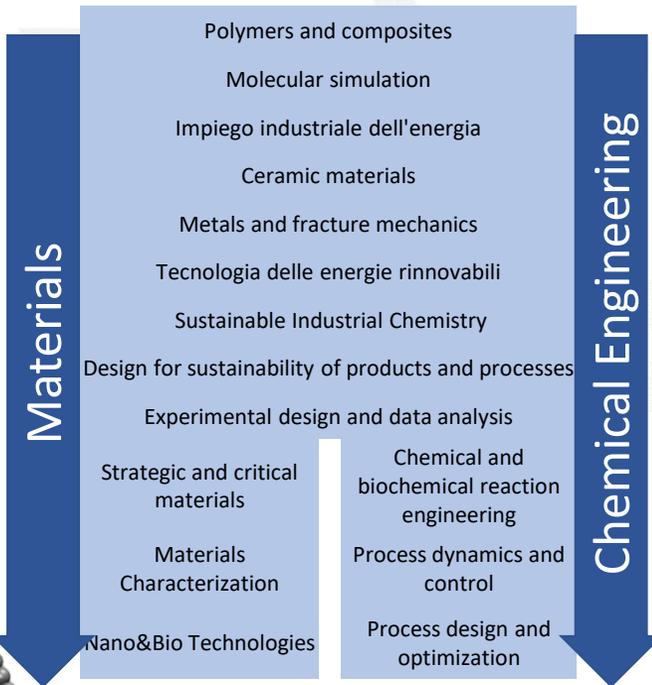
study program



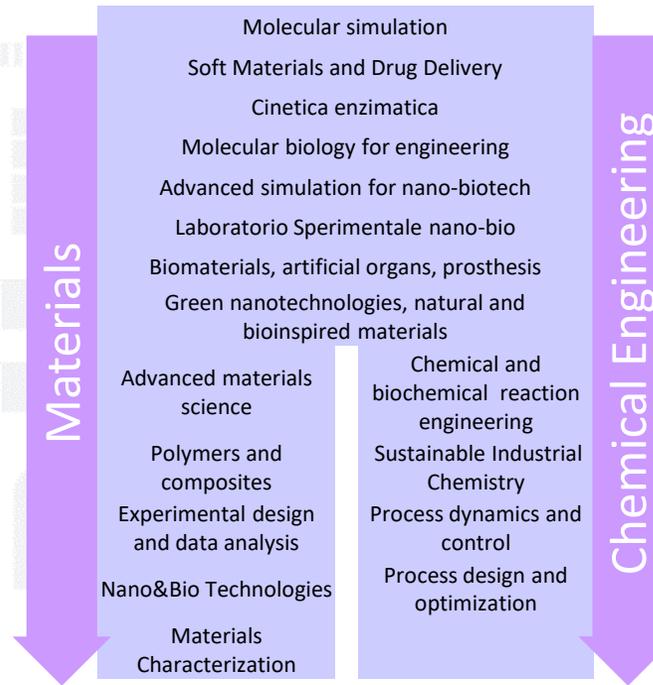
- *entirely renewed*
- *aligned with global and european strategies*
- *flexible*

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

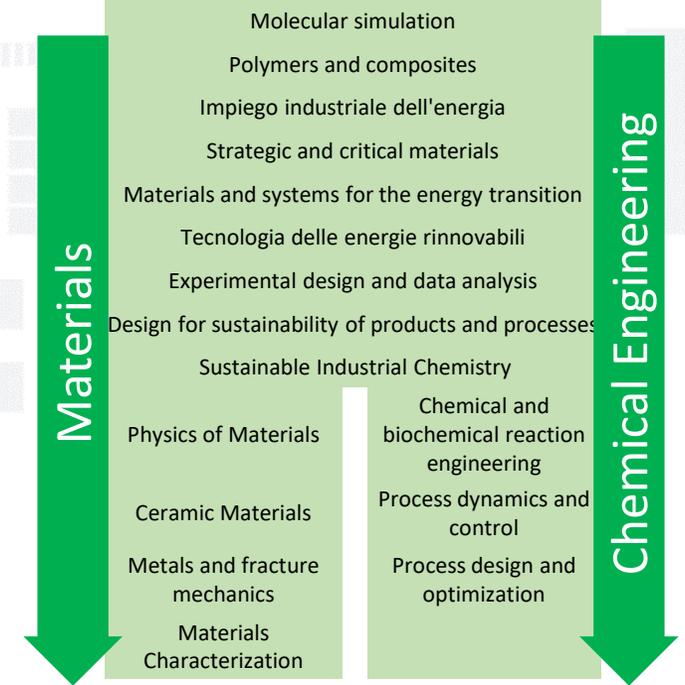
Industrial Technologies



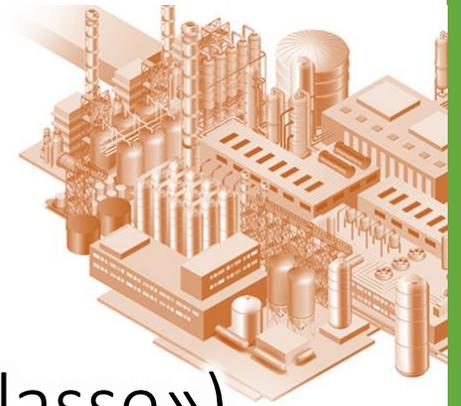
Nano&Bio Technologies



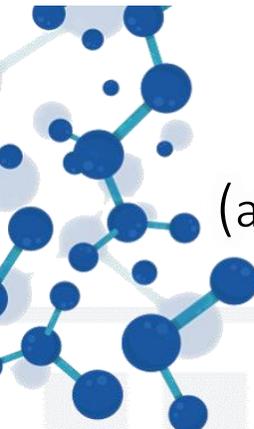
Technologies for Sustainability



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



general information



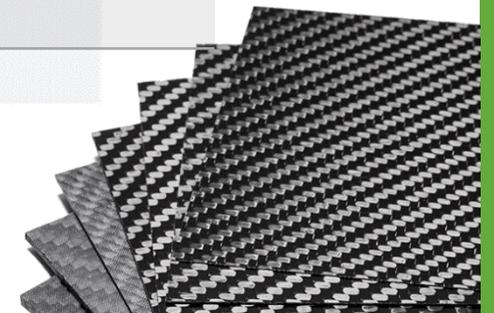
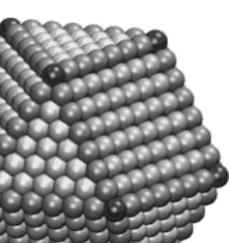
The course is an interclass degree («laurea interclasse»)
(a merge of the MS in Chemical Engineering LM-22 and the MS in Materials Engineering LM-53)

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 complementary («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



CONTACT INFO

Dipartimento di Ingegneria e Architettura

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segreteria@dia.units.it

040 558 7300

Coordinator

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sbaizero@units.it

Detailed information

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

Vanni Lughi - vlughi@units.it

orientamento

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040 3473787



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