



**POLITECNICO**  
MILANO 1863

DIPARTIMENTO DI CHIMICA,  
MATERIALI E INGEGNERIA CHIMICA  
GIULIO NATTA

# Sezione di Ingegneria Chimica

CHIMICA INDUSTRIALE

coordinatore triennio 2020-22

## Alessio Frassoldati

# COMPOSIZIONE



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- 34 componenti (gender balance F/M = 1/4)
- 9 Ricercatori (RTI, RTDB, RTDA) +1 a breve
- 13 Prof. Associati
- 12 Prof. Ordinari

# MISSIONE

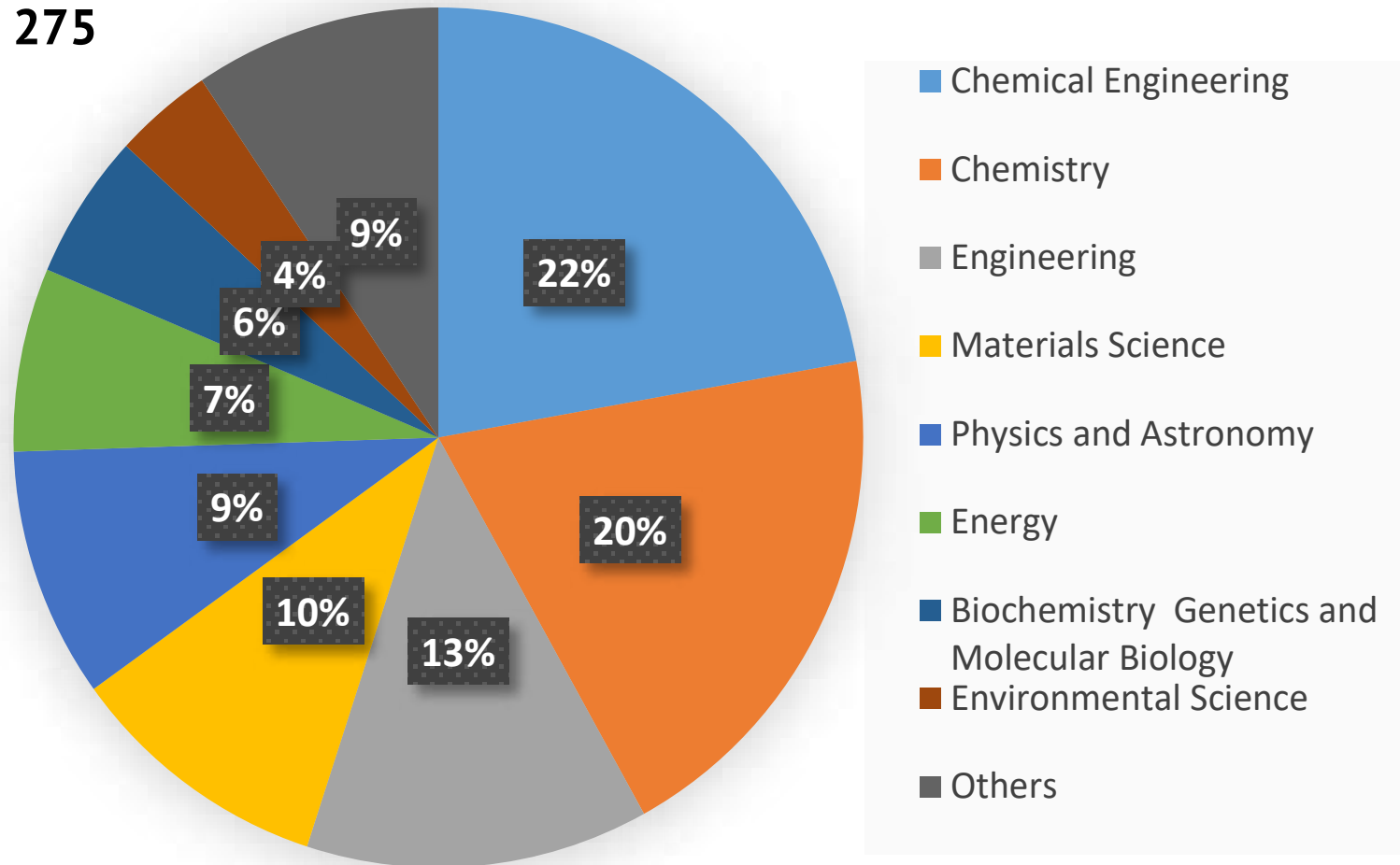
- Condurre ricerca perseguendo l'eccellenza nella ricerca e promuovendo il ruolo centrale dell'**ing. chimica** in tutte le nuove tecnologie che comportano trasformazioni della materia e dell'energia.
- Formare studenti e dottorandi.
- Contribuire allo sviluppo del Paese attraverso il trasferimento tecnologico.

La Sezione è attiva nelle **tree aree strategiche** per il Dipartimento:

- **Energy, Safety and Environment**
- **Health and Life Sciences**
- **Smart and Sustainable Industry**

# ATTIVITA' SCIENTIFICA: analisi degli ultimi 5 anni

Numero pubblicazioni media/anno = 275



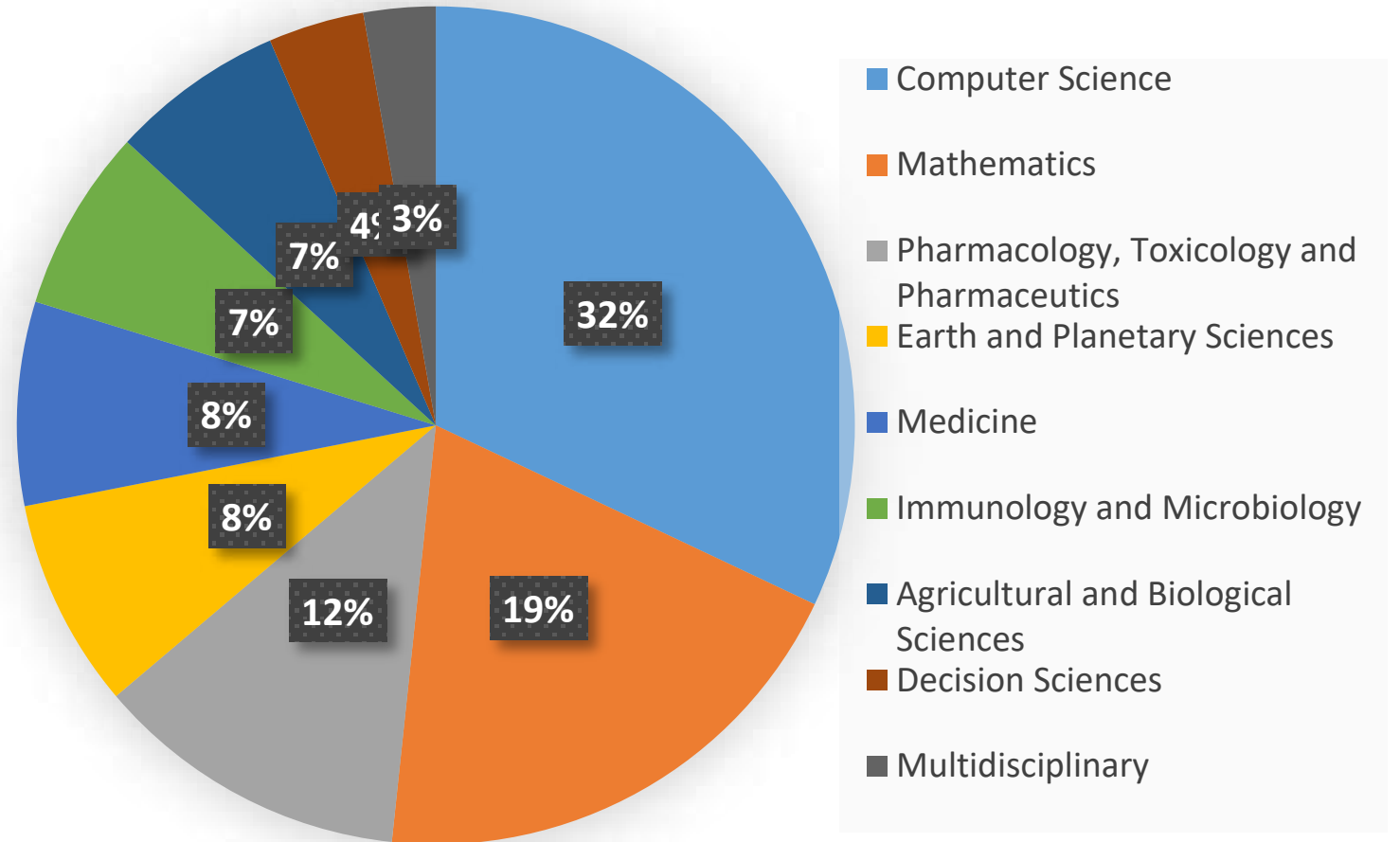
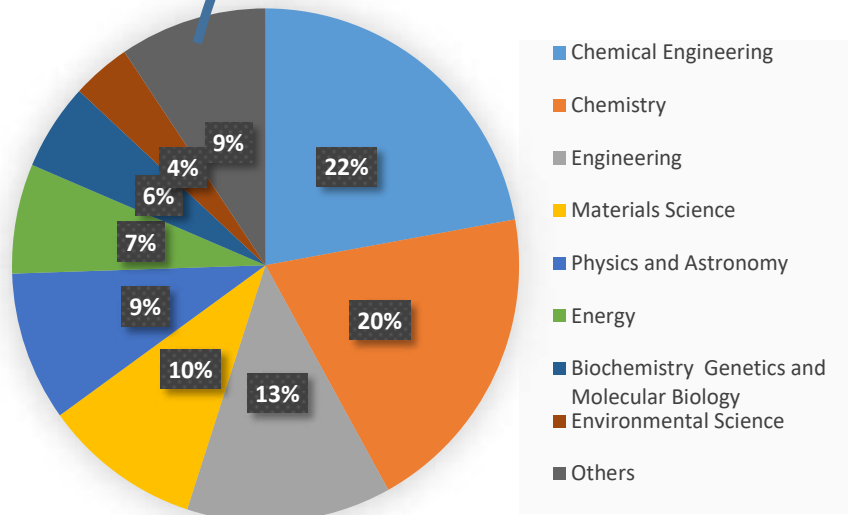
H-index medio Sezione 25.5

RTD/RTI 14.7

PA 23.6

PO 34.8

# ATTIVITA' SCIENTIFICA: analisi degli ultimi 5 anni



# ATTIVITA' RICERCA: gruppi ricerca coinvolti

## **AOCL**

*Applied Organic Chemistry Laboratory*

## **CFALab**

*Laboratorio di Chimica Fisica Applicata*

## **CRECK**

*Chemical Reaction Engineering and Chemical Kinetics*

## **eRAM Lab**

*Experimental Risk Assessment and Management Lab*

## **Fluoritech**

*Fluoritech Laboratory*

## **GASP**

*Group on Advanced Separation Processes & GAS  
Processing*

## **Olfattometrico**

*Laboratorio Olfattometrico*

## **PSE-LAB**

*Process Systems Engineering Laboratory*

## **SEE lab**

*Surface and Electrochemical Engineering Laboratory*

## **Soft Matter**

*Laboratorio Soft Matter*

## **SuPER TEAM**

*Sustainable Process Engineering Research Team*

## **Interazioni con le altre Sezioni**

## **ATTIVITA' RICERCA: 4 laboratori interdipartimentali coinvolti**

**CFDHub@Polimi**

*Laboratorio di fluidodinamica computazionale*

**Laboratorio di Modellazione Molecolare**  
*Laboratorio interdipartimentale di Modellazione Molecolare*

**NanoMedLab**

*Laboratorio interdipartimentale di Nanomedicina*

**MEMS&3D**

*Laboratorio interdipartimentale MEMS&3D*

## **ATTIVITA' RICERCA e TRASFERIMENTO TECNOLOGICO**

3 M€/anno per la Sezione (media ultimi 5 anni)



# ATTIVITA' RICERCA: temi



Renewable energy

Colloids

Applied thermodynamics

Pollutant abatement & reduction

Soft Matter

Plastic waste recycling

Process systems engineering

Odour science

CO<sub>2</sub> capture, utilization and storage

Energy, Safety & Environment

Polymer Reaction Engineering

Advanced Separation Processes

Drug delivery

CFD of reactive flows

Molecular modeling

(Bio)Pharmaceutical Engineering

Clean Combustion

Nanomedicine

Hydrogen and energy carriers

Process control

Energy Storage and Fluorine Chemistry

Sustainable process engineering

Molecular Scale

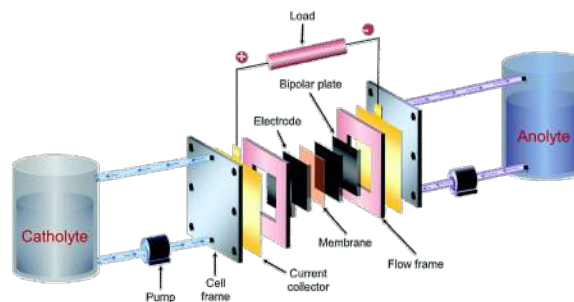
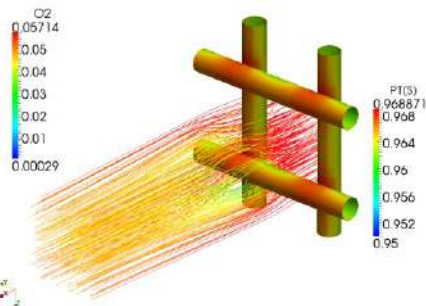
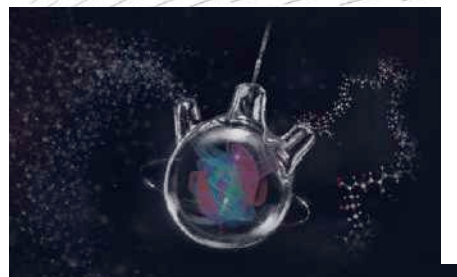
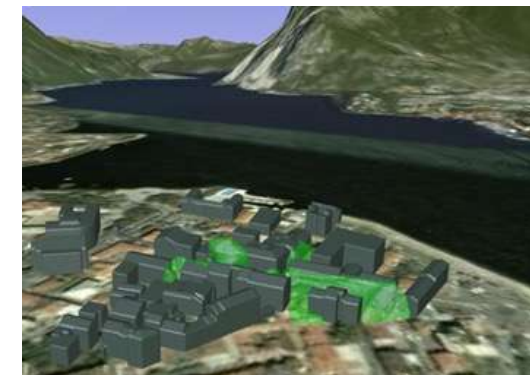
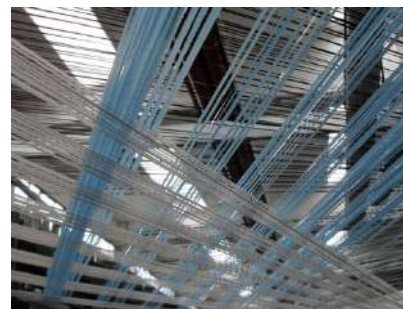
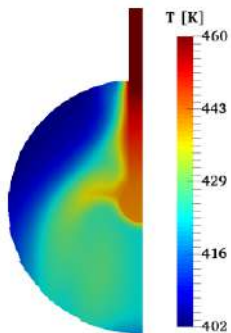
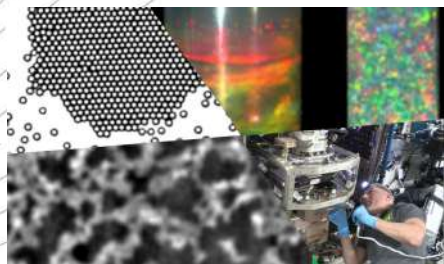
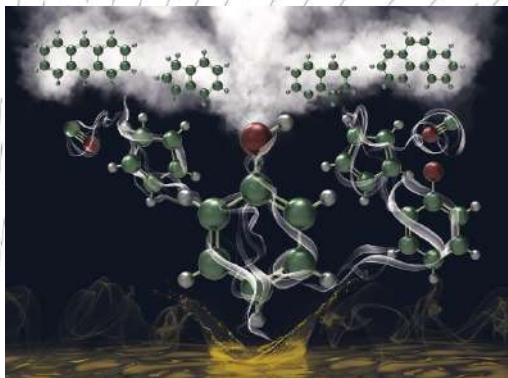
Nano-Scale

Micro-Scale

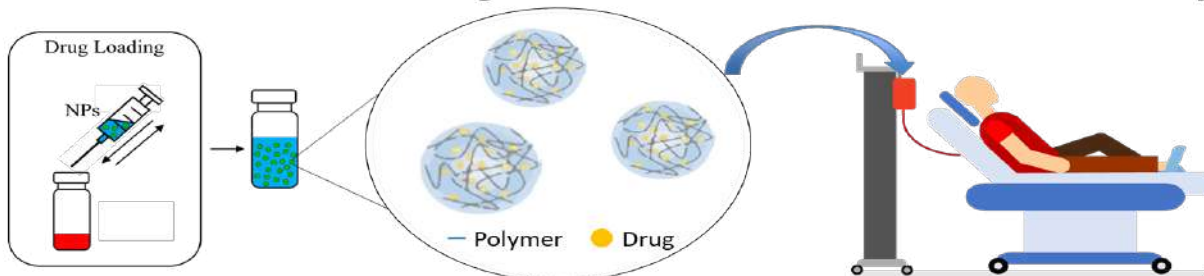
Meso-Scale

Macro-Scale

Mega-Scale



### Drug Formulation and Controlled Delivery



*Fenomeni di trasporto  
Cinetica chimica  
Termodinamica  
Sistemi multifase*

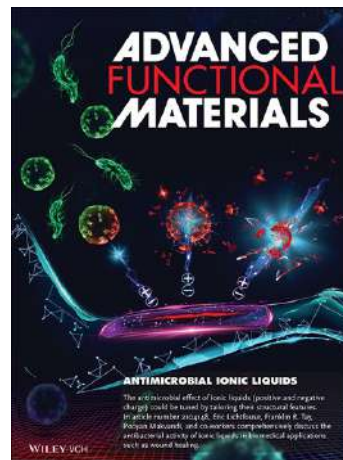
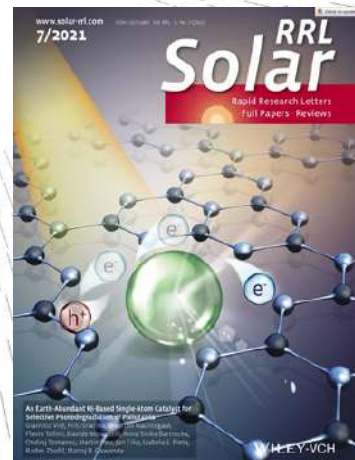
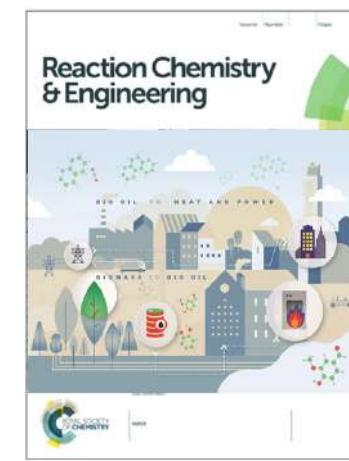
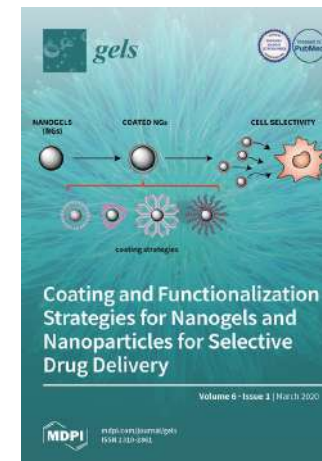
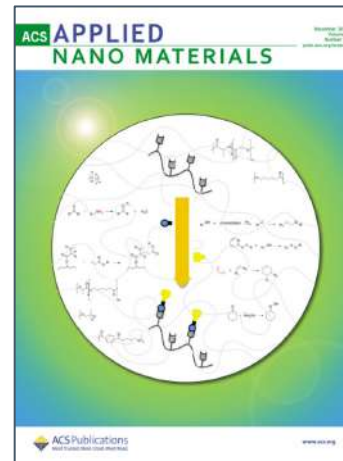
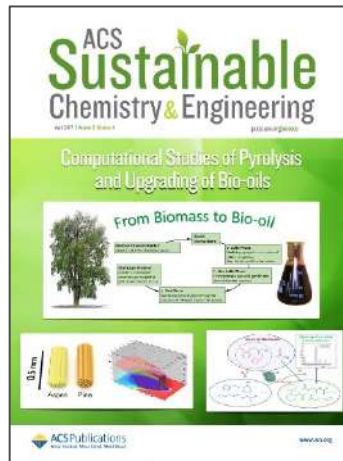
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Attività sperimentale e di modellazione

- Energy, Safety and Environment
- Health and Life Sciences
- Smart and Sustainable Industry

# COVERS: 11+



# HONORS AND AWARD



2021 Emerging Investigator 2021 «Reaction Chemistry & Engineering»

2020 IJMS Young Investigator Award; award from International Journal of Molecular Sciences

2020 Research Excellence Award. Awarded by the Combustion Institute.

2020 Humboldt Research Fellowship for Experienced Researcher.

2020 premio Felder per chimica in flusso

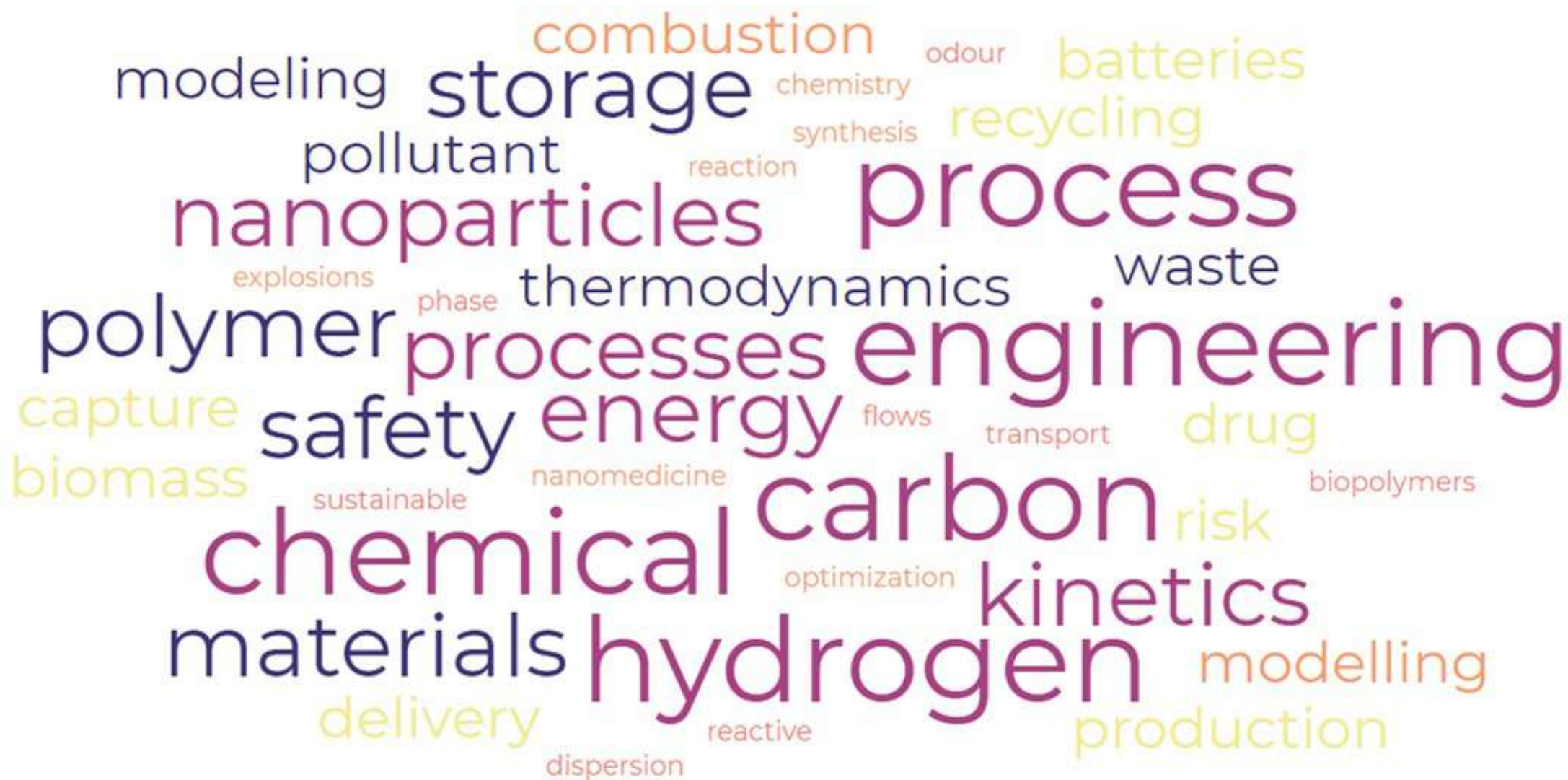
2019 Fellow of the Global Young Academy (GYA);

2019 Fellow of the Combustion Institute

2019, New Delhi, India – Dr. R.A. Mashelkar Golden Medal for the contribution on CO<sub>2</sub> utilization

*Rapidly expanding intersections of a wide range of areas of science with engineering are the new Frontiers in Chemical Engineering. Many of the most interesting and fruitful challenges at the frontiers of chemical engineering involve the **integration of chemical engineering with chemistry, physics and biology** [...]*

*Gil Garnier, “Grand challenges in chemical engineering”  
Front. Chem., 2014*





CHIMICA INDUSTRIALE

**GRAZIE**

**[alessio.frassoldati@polimi.it](mailto:alessio.frassoldati@polimi.it)**

POLITECNICO MILANO 1863