

Invited people

Dr. Jordi Guasch

Acknowledgments

Deganal Team and *Oficina de Suport al Deganat* members of *Facultat de Química, URV*

Participating companies and entities



Commission of the GCS:

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Organized

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The 12 Principles of GREEN CHEMISTRY

Green chemistry is an approach to chemistry that aims to maximize efficiency and minimize hazardous effects on human health and the environment. While no reaction can be perfectly 'green', the overall negative impact of chemistry research and the chemical industry can be reduced by implementing the 12 Principles of Green Chemistry wherever possible.

- 1. WASTE PREVENTION**
Prioritize the prevention of waste, rather than cleaning up and treating waste after it has been created. Plan ahead to minimize waste at every step.
- 2. ATOM ECONOMY**
Reduce waste at the molecular level by maximizing the number of atoms from all reagents that are incorporated into the final product. Use atom economy to evaluate reaction efficiency.
- 3. LESS HAZARDOUS CHEMICAL SYNTHESIS**
Design chemical reactions and synthetic routes to be as safe as possible. Consider the hazards of all substances handled during the reaction, including waste.
- 4. DESIGNING SAFER CHEMICALS**
Minimize toxicity directly by molecular design. Predict and evaluate aspects such as physical properties, toxicity, and environmental fate throughout the design process.
- 5. SAFER SOLVENTS & AUXILIARIES**
Choose the safest solvent available for any given step. Minimize the total amount of solvents and auxiliary substances used, as these make up a large percentage of the total waste created.
- 6. DESIGN FOR ENERGY EFFICIENCY**
Choose the least energy-intensive chemical route. Avoid heating and cooling, as well as pressurized and vacuum conditions (i.e. ambient temperature & pressure are optimal).
- 7. USE OF RENEWABLE FEEDSTOCKS**
Use chemicals which are made from renewable (i.e. plant-based) sources, rather than other, equivalent chemicals originating from petrochemical sources.
- 8. REDUCE DERIVATIVES**
Minimize the use of temporary derivatives such as protecting groups. Avoid derivatives to reduce reaction steps, resources required, and waste created.
- 9. CATALYSIS**
Use catalytic instead of stoichiometric reagents in reactions. Choose catalysts to help increase selectivity, minimize waste, and reduce reaction times and energy demands.
- 10. DESIGN FOR DEGRADATION**
Design chemicals that degrade and can be discarded easily. Ensure that both chemicals and their degradation products are not toxic, bioaccumulative, or environmentally persistent.
- 11. REAL-TIME POLLUTION PREVENTION**
Monitor chemical reactions in real-time as they occur to prevent the formation and release of any potentially hazardous and polluting substances.
- 12. SAFER CHEMISTRY FOR ACCIDENT PREVENTION**
Choose and develop chemical procedures that are safer and inherently minimize the risk of accidents. Know the possible risks and assess them beforehand.

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Medicines and sustainability: synthesis, use, abuse and recycling



Sponsored:



Objectives

The present and future are marked by the problem of climate change and other environmental effects caused by human activity. The pharmaceutical industry is a leader in investments in R&D and quality employment, therefore it has a direct responsibility to promote sustained, inclusive and sustainable economic growth, and full and productive employment. On the other hand, the use of non-polluting and sustainable technologies is being adopted by many different types of industries such as pharmaceuticals, achieving more efficient processes that generate less harmful waste, being respectful of the environment and obtaining safe end products for society.

We propose a program of activities to enjoy an entertaining conference that at the same time allow us to acquire new knowledge related to Green Chemistry. We want to establish debates that facilitate the development of criteria in this field for the future as professionals and as a society.

Location

Due to the exceptionality of the current pandemic, the activities will be carried out online. At the end of the registration period for the CGS, the enrolled students will be informed about the links to connect to the different sessions.

Enrolment information

- Students enrolled in Citizenship (course 2020-21).

They must register for the course in the Moodle space of the subject and, therefore, they do not have to register via the web. Consult open **until February 5**, included.

- Students not yet enrolled in Citizenship, but who want to be kept up the GCS's note for a next enrolment.

They must register by sending an e-mail to mariacinta.pujol@urv.cat, without payment (till February 5).

The working sessions have a total duration of 10h. Students may request the recognition of the activity with 1 ECTS for the Subject Citizenship (Degree in Chemistry). The recognition of the credit requires the fulfilment of the requirements indicated in the document of evaluation of the GCS.

Activity Program

Monday February 15

15.30 • Presentation of the 14th GCS.

Motto, objectives, program of activities, participation, standards and evaluation criteria.

Language: Catalan and English

Tuesday February 16 (morning)

9.30 • Virtual Visit

Medichem

12.00 • Opening ceremony of the XIV GCS.

In charge of the dean of the *Facultat de Química* of the URV, Yolanda Cesteros

Language: Catalan

12.30 • Conference.

[El repte de la química verda per a la indústria químicofarmacèutica](#)

By Dr. Joan Guasch, Farmacèutica Esteve

Language: Catalan

13:30 • Break

Tuesday February 16 (afternoon)

15.30 • Presentation and screening of the movie

[Dallas Buyers Club, 2013](#)

VO English

16.45 • Debate.

Activity related to the movie.

Thursday February 18 (afternoon)

15.00 • Workshop: *Availability of medicines at home: dosages, expiration and use*

Directed by: GCS Commission.

Language: English