





Cité des Sciences et de l'Industrie







making

The International Union of Pure and Applied Chemistry

The IUPAC - for International Union of Pure and Applied Chemistry-is the worldwide authority on chemical nomenclature. It chooses the name of new elements in the periodic table and defines their atomic weights, the name of organic and inorganic compounds and many other data.

It was established in 1919 as a neutral and objective scientific organization for the advancement of the chemical sciences via collaboration and free exchange of scientific information.

More than 55 countries, 31 associated organizations, about 58 company associates are participating in IUPAC activities. Professor Qi-Feng Zhou (China) is the current president

Before the creation of IUPAC, the first attempt at organizing organic chemical nomenclature was started by Kekulé in the 1860s in Geneva. Later in Paris in 1911, a predecessor of IUPAC – the International Association of Chemical Societies – met and proposed a new association to work on international collaboration and standardization in chemistry

Created exactly on July, 28, 1919, IUPAC is nowadays about much more than nomenclature, promoting the service of chemistry to society and to global issues. You can discover its wide range of activities here: https://iupac.org

Île-de-France Regional council

Île-de-France Regional Council (Paris Region) covers as little as 2% of France's territory, but gathers 18% of its population and 30% of its GDP. It manages many aspects of 12 million people's life: transportation, high schools, environment, economic growth... Following the #Leader regional strategy, it supports Research and

Innovation activities and finances major scientific networks, among which RESPORE, a network in porous solids science... and it also supports

the 51st IChO, since the tasks take place in a



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high school!







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POUR L'ÉCOLE **DE LA CONFIANCE**

8



Sunday, 28 July 2019



catalyzer

First comes work, then comes fun!



Let's have a flashback on the Reunion Party that happened Friday evening at Polytechnique School. Everybody gathered after 4 days of translations and exams. It's now time to party!



Problem T3: About Gay-Lussac





was a French chemist and physicist, pioneer in several topics that were highly studied in the early 19th century, such as the elucidation of gas properties, of the composition of the atmosphere and of the elemental analysis. He thereby discovered (with Humboldt) that water is made of 2 hydrogens and 1 oxygen.

He never wrote a manuscript gathering all

his teaching. Thankfully, a stenographic

Joseph Louis Gay-Lussac (1778-1850) transcription allows us to read the 33 lessons he gave during the first trimester of 1828.

This work falls into 3 parts: vegetal, animal chemistries, and history of salts. This latter inspired the problem T3 which dealt with silver chloride. Gay-Lussac exposes the features of this milk-white solid, from its ways of syntheses to its physical pro-Gay-Lussac was appointed professor of perties. We also discover delightful details: chemistry at the École Polytechnique in when put on the tonque it has no taste! 1808. He was appreciated by his students And do not use a silver bowl to evaporate and was famous for his rigor and accuracy. seawater, you will precipitate silver chloride as well as sodium chloride!

Problem T2: Dihydrogen, a useful energy vector?



Because its use in fuel cells (preparatory problem 4) is quite straightforward, dihydrogen could be used as an energy vector. Several technological barriers are nevertheless still encountered and chemistry could lead to significant improvements. Two of them are especially important: the issue of H2 storage (preparatory problem 5) and its production also.

Dihydrogen is easily produced by reaction of a reducing metal and a strong acid, but this reaction is not efficient enough for mass production. Other processes include catalytic reforming from natural gas or use of algae for photolysis of water.

This last method can be mimicked by using water-splitting (i.e. electrolysis of water). Problem T2 studies this method in the context of photocatalysis, using two different production modes. More generally, water-splitting is a very versatile method: each time a primary energy source is present (nuclear energy close to water, solar energy in sunny countries, etc.), dihydrogen can be produced and used as an energy vector. This method allows both flexibility and an efficient centralized production.

9. Fluorine

Discovery: 1886 by Henri Moissan (Paris France) Family: Halogens Period: 2nd

A few of its properties

The most electronegative and oxidative element of the periodic table, Fluor has many uses due to its strong interaction with other elements. $F_{2}(g)$ is indeed one of the only chemicals to react with xenon!

Its derivatives have a wide variety of uses: in fuel cells with fluorinated proton exchange membranes, in lithium-ion batteries (liquid electrolytes, fluorinated electrodes) - both useful in hybrid vehicles -, in mobile phones... Fluorinated polymers are heat stable, inert, hydro- and oleophobic: polytetrafluoroethylene is the most famous one!

Game of the day

Four elements for life

Carbon, Hydrogen, Oxygen and Nitrogen are 4 basic elements that play a crucial role in biochemistry. Their combinations are infinite and generate countless organic compounds, some of them very important for human life. Associate the 5 different compounds with their respective combinations

(molecular formula):

A) aspirin, S) sucrose, N) nylon, P) paracetamol, D) DHA (omega-3 fatty acid) 1) C₁₂H₂₂N₂O₂ - 2) C₀H₈O₄ - 3) C₂₂H₃₂O₂ - 4) C₁₂H₂₂O₁₁ - 5) C₈H₉NO₂

Answer - Game of Saturday, 27 July

You will recognize "51 IChO 19 Fr(ance)" with the atomic numbers or names of the elements.

Vocabularv

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Let's not forget the 150th anniversary of the Periodic Table of Chemical Elements!



Reunion Party!



On the occasion of the Reunion Party, students and mentors met again after being separated and were allowed to pick up their phone and electronic devices.



Participants also had the chance to discuss with the IChO 2019 partners. Thanks again to all for their support!



After the party, there was still some work vesterday for mentors with the rating of the exams.