

Science and Cooking n°2

Dr Atomato's second recipe: Cooking needs chemical skills and magic molecular ingredients!

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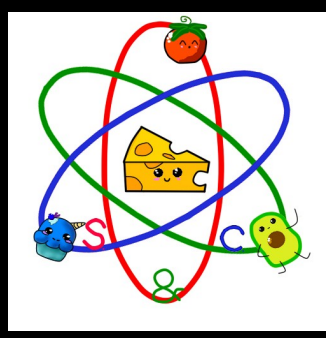
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Cooked by Aya, Baptiste, Célestin, Eloïse, Emilien, Ferdinand, Inès, Jordane, Joseph, Laura, Lou, Marwa, Morgane, Pierre, Robin, Soline, Soraya, Telio, Camelia, Romeo.



Molecular cuisine...

Conference about molecular cuisine

On Friday, November 30th, we attended a conference about science. Christophe Lavelle, researcher at Agro-Paris-Tech, talked to us about the importance of science, physics, chemistry and biology, to make progress in molecular cooking.



The rotten apple made by a starred chef, Mr. Lavelle's favourite dish !



He also showed us some pictures of dishes which we can find in fancy gastronomic restaurants.

He talked to us about the Nouvelle "Nouvelle Cuisine"

which corresponds to dishes where you can't recognise the ingredients. You have to taste it to find out what the dish is made of.

To conclude, we found this conference really interesting and we discovered a lot of new things about the importance of science in the field of molecular cooking. It was a great experience to meet an expert who shared his knowledge with us.

And our favourite one! An helium filled balloon with a green apple taste ! And after having eaten it, you speak with a crazy high voice!

Morgane and Jordane, 2^e 4

Experiments on molecular cuisine.

In the afternoon of Friday, November 30, 2018, we conducted experiments on emulsification with Christophe Lavelle.

We were divided into groups of two and each of these groups had to perform experiments using different emulsifiers to create food made from syrup or chocolate in solid form. There were many different emulsifiers (often algae-based). Finally, we made strawberry and chocolate spaghetti, mayonnaise, chocolate mousse.

This was an interesting experience for us because we learned to cook with emulsification, and we could taste strawberry spaghetti.



Christophe Lavelle, Ph.D. in Molecular Biophysics

Emilien and Telio, 2^e 1

Lecithin magic!

Lecithin is a powerful emulsifier which stabilises emulsions or foams, since it acts as a linking agent between hydrophobic (water-hater) and hydrophilic (water-lover) components.

To make a delicious foam :

Pour 150mL of cranberry syrup in a bowl. You can also try it with orange juice, coke or whatever liquid you want. Add the soy lecithin and mix it with a hand blender without moving the plunger.

So nice!



If you forget to add the lecithin, there won't be any foam!!!

Then, with a tablespoon, collect the foam at the surface.

Dress it on a piece of toast with a slice of sheep cheese. Spread one or two droplets of honey or maple syrup, and **enjoy !**

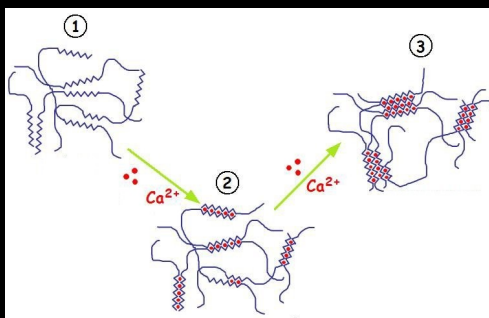
For example, you can prepare it for an aperitif, and it's very fun to make

Inès- 2^e5, Camelia, 2^e 7

... *Chemicals and recipes*

Calcium Alginate

On Monday 28th of February, we made a new recipe called "Spherification". This recipe uses a reaction of Alginate and Calcium to create a kind of ball of viscous liquid surrounded by a gel membrane. For example if we put some coke with some calcium lactate in a bath of sodium alginate dissolved in water we get liquid coke surrounded by gel and when you eat it, you pierce the gel membrane and liquid coke spills into your mouth. That is a very good feeling!!



The recipe is simple :

- Take some sodium alginate and mix

it with distilled water.

- Put some calcium lactate into the drink that you want to flavor.
- Put your calcium lactate solution into the freezer until solid.
- Put a small quantity of the calcium lactate solution into your alginate solution.



- The reaction is finished when the alginate solution has gelled because calcium attracts alginate and makes it solid.
- Then just put it in tap water.

Now you can play with this reaction and make some funny recipe !

Pierre-2e1, Célestin 2e6

Agar recipes

Agar (also called Agar-Agar, what a funny name!) is a molecule made from red algae. Its molecular formula is C₁₂H₁₈O₉. It's composed of Agarose and Agaropectin, which are polymers. Agar is soluble in hot water, and it's a jellifying agent.



What are "polymers", Jamie? Well, it's simple, Fred! It's a very long chain of identical molecules called monomers, which repeat a model over, and over again...

It gels under 35°C and is liquid up to 80°C, so in a room with a regular temperature, it's a gel. Cool, isn't it? Do you want to see something cooler? Here you go! Agar helps to jellify liquids, and it's a vegan alternative to gelatin, which mainly comes from pork! It's used in cooking, mainly for making candies, desserts, etc. Look how cute it can be!

I'M SO HUNGRY!!!!

Agar-agar is also used in chemistry, dental care, and microbiology for gels.

How weird! I'm not hungry anymore...



And what did we do exactly with Agar?

We've made a recipe with agar, by boiling it and mixing it with water, chocolate and honey, filling a silicone tube with the mixture and putting it into an ice-water bath, and finally, we got this:



Chocolate spaghetti !!!

But one of my classmates is obviously an artist and he made this, I'm so jealous!



Mmmh!

Well, it tasted good, that's the important point!!!

Laura, Eloise-2e1,

Soraya-2e4, Soline, Lou, Inès- 2e5

When cooking meets Art

European project

The European project of Montmajour high school teachers worked in partnership with high school students from Germany, Belgium, Greece, Spain, Portugal and a consultant from Mexico.

On November 15th, Montmajour high school inaugurated the eTwinning label which rewards the quality of the work and exchanges during the Erasmus+ project called "Sustain me".

For two years, we dealt with issues related to sustainability. The eTwinning plaque was inaugurated in the presence of students involved in the project as well as six foreign coordinators. They were present for 3 days to write the next project entitled "Health and Safety". It will take place over three years, including short and long-term mobilities.



Aya, 2^e 3-Marwa, 2^e4



Mexico conference

Fernando Ausin-Gomez is a Mexican ecologist who held conferences all around the world. Before that, he worked many years on a project called the Biobus. The concept was really new when he started it. He developed a bus which works with used oil. He asked restaurants for it, and he recycled it, making biofuel. He created this bus with some friends of his.



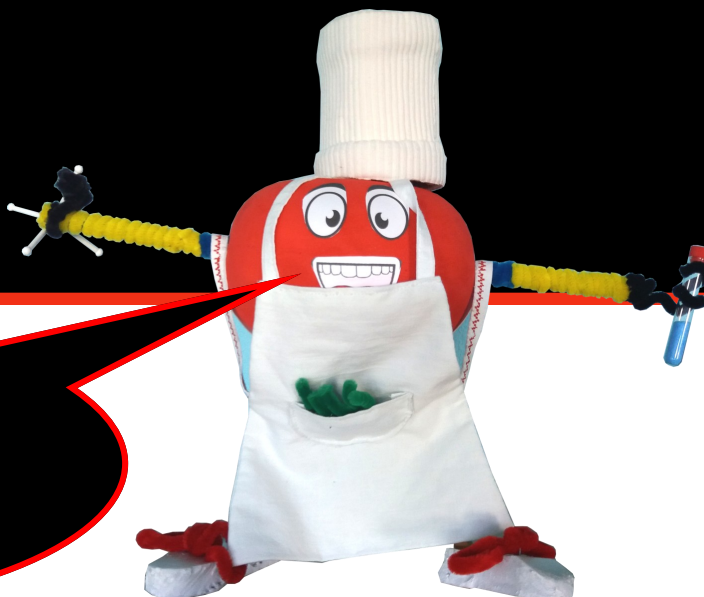
In the conference, Fernando talked about sustainability, which is a way to sustain the people of a country and at the same time respect the environment. Doing this leads to degrowth, necessary for a healthy planet. It's important to make a difference

between sustainability and sustainable development. The second expression means to continue economical growth and protect the environment at the same time. According to Fernando, sustainable development is not feasible anymore.

For example, he told us that breeding animals is very expensive in terms of place, water, CO₂ emissions... And if we want to be more sustainable, we have to consume less meat. Not stop eating meat altogether but definitely eat less. And always make sure you buy quality meat, coming from a "happy cow" which lived in a big field !

This conference was really interesting and made us think about our way of life.

Célestin, 2^e5



LESSON 2

What to remember : Chemicals are unavoidable magic ingredients in molecular cuisine!