INRAE-AgroParisTech International Centre of Molecular and Physical Gastronomy

International Contest of Note by Note Cooking N°12

Topic: Energy

Organizerss
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Introduction : Note by Note Cooking

Synthetic cooking is the culinary technique of using pure compounds to produce foods ("dishes"). It is the basis of the culinary movement known as Note by Note Cooking.
With synthetic cooking, the cook has to decide on the shape, smell, flavor, consistency, etc. of each part of the dish. Of course, they have to deal with questions of nutrition and toxicology, and synthetic cooking is part of the wider Note by Note Project, which aims to contribute to food security in 2050, when the world's population will doubtless have exceeded ten billion. In particular, the Note by Note Project aims to combat tne waste - of ingredients, water or energy - while taking care of the environment. The aim is "sustainable food without waste".

The goal of this 12th contest: Save energy

For this new competition, we're inviting competitors (in all three categories: chefs, students, amateurs) to create dishes that consider the serious issue of energy.

The closer you get to the pure, note by note, the better. And the taste of the proposed dish is obviously the most important!

More details

According to the United Nations (https://unstats.un.org/sdgs/report/2023/), ensuring access to clean, affordable energy is essential for the development of agriculture, business, communications, education, healthcare and transportation. The world continues to make progress towards sustainable energy goals, but not fast enough. At the current rate, around 660 million people will still not have access to electricity, and almost 2 billion people will still rely on polluting fuels and techniques for cooking by 2030. Our daily lives depend on reliable, affordable energy. Yet energy consumption is the main driver of climate change, accounting for around 60% of global greenhouse gas emissions. Between 2015 and 2021, the proportion of the world's population with access to electricity rose from 87% to 91%. Ensuring universal access to affordable electricity by 2030 means investing in clean energy sources such as nuclear, solar, wind and thermal power. Expanding infrastructure and modernizing technologies to provide clean energy to all developing countries is a crucial objective that can both encourage growth and help protect the environment.

In the kitchen, the issue of reducing energy consumption is not a simple one: remember that "cooking" aims to :
(1) microbiologically sanitize foods
(2) change their consistency
(3) impart taste.

This new competition on the theme of "energy" is therefore very important, as it will encourage competitors to find innovative ways of tackling a problem of global importance.

As far as the criteria are concerned, competitors' first objective is to produce dishes that:
1. take into account the issue of reducing the energy used to produce food
2. are as close as possible to pure note-by-note cooking (i.e. using pure compounds)
3. taste good!
4. are original
5. are healthy!

As far as the first criterion is concerned, we need to distinguish between "pure synthetic cooking" and "practical synthetic cooking".
- the "pure synthesis cooking" technique consists of using only perfectly pure compounds,
- the "practical synthetic cooking" technique allows you to use predominantly pure fractions: for example, oil is a mixture of triglycerides, or corn starch is only 80% pure amylopectin, but using a particular triglyceride on pure amylopectin wouldn't make much difference. And, of course, why not mix the new ingredients with the old ones (meat, fish, egg, vegetables and fruit), but the closer to the pure note-by-note technique the better.
Participants are free to buy the ingredients or produce them themselves. For example, leaching flour produces gluten and starch, and storing oils in the fridge or freezer produces different fat fractions with different properties.

As for odors, they can be extracted by various means (storage of a raw material in oil, distillation, etc.), but odor compounds can now be found online, from companies like Kitchen Laboratory (kitchen.laboratory@gmail.com) .

To enter the competition, participants must register in different categories

(1) Professional chefs: they will be judged on their ability to create a recipe using pure compounds or a mixture of pure compounds and conventional ingredients.

(2) Students: depending on

Looking for the ingredients?

To cook Note by Note, all you need is your kitchen, your kitchen cupboards and your supermarket. There, you'll find pure compounds such as water, sugar, salt, xanthan gum, lecithin and so on. Some can be extracted. For example, if you acidify milk and extract the curds (mainly casein), you prepare whey. Or, from wheat flour, if you make a dough and remove the starch, you can separate the gluten (which can also be bought from bakers).

There are other cheap ways to source ingredients:
- look for bargains on the Internet through online sales companies
- send an e-mail to the most important suppliers and ask for free samples (small quantities).

Examples of suppliers:
Kitchen Lab. Accessible through:
https://kitchennlaboratory.wixsite.com/researchdevelopment/fr/equipe
Louis François (2019). Louis François- Ingrédients alimentaires depuis 1908. Available at:
http://www.louisfrancois.com/index_en.html
MSK (2019), Catalogue MSK. [en ligne] Disponible à l'adresse : http://msk-ingredients.com/msk-catalogue-2019/?page=1.
Sosa (2019). Catalogue Sosa. Available at: https://www.sosa.cat/
Texturas (2012). Texturas Albert y Ferran Adria. Available at:
http://albertyferranadria.com/eng/texturas.html

Each dish must be :

1. described in a .doc file by a recipe (Roman 12) giving .
    1. ingredients, including quantities
    2. process
2. photographs.

Candidates must accept that their recipes and photos may be used (with their name) by the competition organizers and partners (see authorization for use at the bottom of this document).

Evaluation :

Compliance with "energy savings" theme
Feasibility, reproducibility
Originality of the work.
The use of pure compounds is preferred to the use of fractions.
Of course, the products must not be toxic.
The complexity of tastes will be appreciated: dishes have a shape, a consistency, an odor, a taste, a trigeminal sensation, a temperature...

Who can enter?
The competition is free and open to all. But there will be different categories:
- professional chefs,
- students,
- amateurs.

How to participate?
To register, simply send an e-mail to icmg@agroparistech.fr with your postal address, telephone number and signed authorization to distribute the competition material.

Then, to submit the result, send a file (.doc file) to icmg@agroparistech.fr describing the recipe in detail, together with a powerpoint document (.ppt file) showing the various stages and the final result, with high-resolution 300 dpi photos.

Dates :
- applications before 20 August 2024.
- recipes sent before 25 August 2024.

Evaluation :
Evaluation will take place in two stages:

1. posting of all recipes, and pre-selection by a jury

2. evaluation of pre-selected recipes by a jury composed of :

Jean-Pierre Lepeltier (Toques Blanches Internationales)
Patrick Terrien (Toques Blanches Internationales)
Sandrine Kault-Perrin (Louis François Inc)
Dao Nguyen et Pasquale Altomonte (Kitchen Lab)
Philippe Clergue (Institut Cordon bleu)
Yolanda Rigault (organisatrice)
Mark Traynor (University of Auburn)

Prize giving event:

INRAE-AgroParisTech International Centre of Molecular and Physical Gastronomy

Physically: Campus Agro Paris Saclay, Palaiseau (France), a Friday in early September 2024 (to be defined later during the year)
On line: with a link that will be given when you apply at icmg@agroparistech.fr

Prizes will be awarded by the partners : Louis François SA, Kitchen Lab, Institut Cordon bleu. The best results will be posted on various websites (notably the INRAE-AgroParisTech International Centre of Molecular and Physical Gastronomy website: https://icmpg.hub.inrae.fr/international-activities-of-the-international-centre-of-molecular-gastronomy/synthetic-cooking-note-by-note-cooking). They will also be presented on posters at roadshows.

Thanks to our partners
Companies Louis François, Kitchen Lab, Institut Cordon bleu

LOUIS FRANÇOIS

KITCHEN LAB

LE CORDON BLEU PARIS

INRAE-AgroParisTech International Centre of Molecular and Physical Gastronomy

Diffusion authorization

I, the undersigned ..... residing at ..... hereby authorize the organizers and partners of the 12th Note by Note International Contest for Note by Note Cooking to distribute the recipes and images submitted for participation in the competition.

Done in …….. the ……..

Signature :

Annexe

To understand, let's make the distinction

On the one hand, there's molecular gastronomy, which will develop ad infinitum in the silence of scientific laboratories.
And on the other, there are its applications: "molecular cuisine" (which we must hurry to outgrow) and "synthetic cuisine", which will be the next big, sustainable culinary trend!

Hervé This

1. The scientific work

In 1988, the scientific discipline known as "molecular gastronomy" was officially created.
It is a scientific activity, carried out by scientists (not cooks), based, like all other scientific disciplines, on experiment and calculation, and which, like all other scientific disciplines, aims to understand phenomena.
In this case, the aim of molecular gastronomy is to investigate the mechanisms of phenomena that occur during the preparation and consumption of dishes (or foods).
Let's be clear: molecular gastronomy is not cooking... even if some people (wrongly!) confuse gastronomy with haute cuisine! We should point out here that the expression "molecular gastronomy" is perfectly suited to designate a scientific activity such as the one described here. Indeed, the word "gastronomy" actually refers to "reasoned knowledge", not fine cuisine1. Molecular gastronomy, a scientific activity, is indeed "reasoned knowledge", and it is "molecular", just as molecular biology is, in that it considers the molecular aspects of culinary transformations.
In short, molecular gastronomy, and it's a mistake to say that some cooks practice molecular gastronomy; they can only practice "molecular cuisine" (an unfortunate expression, but one imposed by the circumstances), or, better still, "molecular cooking".

1. A culinary application

What is causing confusion is that, at the same time as we created molecular gastronomy, we also wanted to renovate culinary techniques, and introduced the terminology "molecular cuisine" to designate this new, renovated cuisine.
The definition of "molecular cuisine" is:
"The production of food (cooking, that is) using "new" tools, ingredients and methods".
In this definition, the term "new" more or less refers to everything that wasn't in the kitchens of French chefs in 1980. For example: the siphon (to make mousses), sodium alginate (to make liquid-core pearls, vegetable spaghetti, etc.) and other gelling agents (agar-agar, carrageenans, etc.), liquid nitrogen (to make liquid-core pearls, vegetable spaghetti, etc.), and so on.), liquid nitrogen (for the production of sorbets and many other preparations), the rotary evaporator, and, more generally, all the laboratory equipment that can be of technical use; an

example of a new method, finally, the preparation of "chocolat chantilly", beaumés, gibbs, nollet, vauquelins, etc. (see Cours de gastronomie moléculaire n°1 : Science, technologie, technique (culinaires) : quelles relations ?, Ed Quae/Belin).
Of course, all these tools, ingredients and methods are not new in the strict sense of the term (many "new" gelling agents are centuries old, in Asia, and have been used by the food industry for a long time, while many tools are traditional in chemistry), but they are not new in the strict sense of the term (many "new" gelling agents are centuries old, in Asia, and have been used by the food industry for a long time, while many tools are traditional in chemistry).

3. The next trend : note by note cooking

The next, far more exciting proposal is that of NOTE A NOTE CUISINE.
It was born in 1994 (published in the journal Scientific American) when we were testing the introduction of defined compounds into foods: paraethylphenol in wines or whiskies, 1-octene-3-ol in dishes, limonene, tartaric acid, etc. The initial proposal was to improve foods... but naturally, as an extension of the previous practice, we introduced the concept of "note to note". The initial proposal was to improve foods... but as an extension of the previous practice, the idea of composing foods entirely from compounds was naturally introduced.
In other words, synthetic cooking (and note-to-note cooking) no longer uses traditional mixtures of food compounds (meat, fish, fruit, vegetables), but only compounds... just as electroacoustic music does not use trumpets, violins, etc., but only pure sound waves that are combined.
Using pure compounds, the chef must therefore :
- design the shapes of the elements making up the dish
- design their colors
- design their flavors
- conceive their odors (ante and retronasal)
- design the trigeminal action
- design consistencies
- design temperatures
- nutritional constitution
- etc.

To date, the feasibility of this new cuisine has been demonstrated by several achievements:
- first dish, presented to the press by Pierre Gagnaire in Hong Kong, in April 2009
- dish presented by Alsatian chefs Hubert Maetz and Aline Kuentz at the Franco-Japanese Scientific Meetings (JSTS) in Strasbourg, in May 2010
- Note by Note meal by chefs from Ecole du Cordon bleu Paris, October 2010
- Note by Note meal served on January 26, 2011, to launch the International Year of Chemistry, at UNESCO, Paris, by the Potel&Chabot team, headed by Jean-Pierre Biffi
- Note by Note cocktail served in April 2011 to 500 Michelin-starred newcomers + the press at Espace Cardin, Paris, by the same Potel&Chabot team
- Note by Note meal served in October 2011 by the team of chefs from Ecole du Cordon bleu Paris
- Partial Note by Note meal by chefs from the Association des Toques blanches internationales (Jean-Pierre Lepeltier, Julien Mercier, Vincent Vitasse, Marie Jouannou, Michael Foubert) at the 2011 Telethon, December 3, 2011

- demonstrations by Jean-Pierre Lepeltier, Michael Foubert, Patrick Caals, at the Cours de gastronomie moléculaire 2012, at AgroParisTech, Paris.
And so on!!!!

The construction of this kitchen raises many questions:
- rural development: in particular, it is proposed that farmers add value to their products (on the farm), instead of delivering them directly at low prices; this value enhancement involves fractioning and possibly cracking. Jean-Louis Escudier, from INRA Montpellier, gave a presentation of accessible products at the 2012 Molecular Gastronomy Courses:
http://podcast.agroparistech.fr/users/gastronomiemoleculaire/weblog/756f3/Gastronomie_Moleculaire_2012_partie_2.html
This was followed by a fractionation demonstration by Stanislas Baudouin and Laurent Joron:
http://podcast.agroparistech.fr/users/gastronomiemoleculaire/weblog/8ddb4/Gastronomie_Moleculaire_2012_partie_3.html
- economic: not only is transporting fruit and vegetables a terrible waste (most of it is water, and the food spoils), but cooking is a terrible waste, with yields from conventional cooking systems as low as 20%!
- sensory: to date, little is known about the effect of mixtures of pure compounds, and cooks will have to learn the "letters" of the new alphabet to produce meaningful "phrases".
- technical: in many respects, there's still a lot to learn, especially when it comes to consistencies, but also colors, flavors (ions, amino acids, various sugars) and so on.
- artistic: do we want to do something that seems new, or do we want to do something classic? Anything is possible, and to understand the question, we suggest you imagine yourself in front of an empty plate and ask yourself: what am I going to put on it (and why)?
- Politics: what about the French specificity of climates and terroirs? Let's not be afraid: the total phenolic compounds of Syrah have nothing in common with those of Grenache, and each region has its own particular productions, as far as fractions (as opposed to pure compounds) are concerned. However, we should undoubtedly consider that fractioning is more appropriate than the use of synthetic products.
On the other hand, Professor Pierre Combris (INRA Ivry) has clearly shown that the conventional food model is doomed in the more or less short term:
http://podcast.agroparistech.fr/users/gastronomiemoleculaire/weblog/bc1c7/Gastronomie_Moleculaire_2012_partie_8.html
- nutritional: this time, we're going to have to learn how to eat! From
new, essential scientific questions
- toxicology: only safe compounds or fractions will be used in note-to-note cooking! Better than conventional cooking, then, where you're "subjected" to indistinct, poorly characterized "cocktails". At the 2012 Molecular Gastronomy Courses, Prof. Robert Anton discussed this issue, and showed that note-to-note cooking was to cooking what modern pharmacy, with well-characterized drugs, was to ancient, very "hazardous" pharmacy:
http://podcast.agroparistech.fr/users/gastronomiemoleculaire/weblog/c9de4/Gastronomie_Moleculaire_2012_partie_7.html
- etc.
But:
1. an energy crisis is looming: it's not certain that our traditional kitchens are sustainable;
2. the Ancients are always beaten by the Moderns, who want objects of their own generation;
3. the fractioning of agricultural and livestock products already exists for milk and bread; why not for carrots, apples, etc.?

4. Objections to note-to-note cooking have most often been made to modern music... but all radios play electronic music. In other words, aren't we at the equivalent of 1947, when Varèse and a few others launched electronic music?