

# 10<sup>th</sup> International Workshop on Molecular and Physical Gastronomy (IWMPG 10)

AgroParisTech, 16 rue Claude Bernard, 75006 Paris (France)  
Tel: +33 (0)1 44 08 16 61. email : [icmg@agroparistech.fr](mailto:icmg@agroparistech.fr)

**1-3 June 2021**

Organized by:  
**AgroParisTech-INRA International Centre for Molecular Gastronomy**


**Under the patronage of the Académie d'agriculture de France**



## **Suspensions (liquid suspensions, solid suspensions, complex suspensions)**

**INRAE**

**ICMPG**

AgroParisTech 

**Director:** Hervé This vo Kientza

**Organization Committee:**

**Pr Róisín Burke (Technological University Dublin, Ireland), Pr Hervé This vo Kientza (AgroParisTech-Inra), Pr Dan Vodnar (University of Cluj-Napoca, Romania)**

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## Purpose of the Workshop

*« La gastronomie est la connaissance raisonnée de tout ce qui se rapporte à l'homme en tant qu'il se nourrit »* (Gastronomy is the reasoned knowledge about man's nourishment)

Jean Anthelme Brillat Savarin (1755-1826)

Writing about the application of the chemistry to the art of cookery:

*« In what art or science could improvements be made that could more powerfully contribute to increase the comforts and enjoyments of mankind »*

Sir Benjamin Thompson, Count Rumford, (1753-1814)

*« Molecular gastronomy is the scientific activity consisting in looking for the mechanisms of phenomena occurring during dishes preparation and consumption*

Hervé This and Nicholas Kurti, (1988)

The object of this workshop will be to bring together a group of scientists to discuss collectively the science behind the practices carried out in the kitchen.

Previous workshops have been held on the role of emulsions, the effects of cooking methods on food quality and the management of food flavours.

The above quotations from the writings of two founders of Molecular and Physical Gastronomy express in a nutshell the spirit and the objectives of the Workshop: the emphasis will be on gastronomy rather than nutrition, on domestic and restaurant cooking rather than industry.

May we also point out that, as the name IWMG « N. Kurti » indicates, this is a workshop and that participants are encouraged to make use of the laboratory (near the lecture room) which is reasonably well provided with both culinary and scientific equipment.

## In memoriam Nicholas Kurti (1908-1998)

Nicholas Kurti was born in Budapest (Hungary), 14 May 1908, and educated there in the same Gymnasium as Edward Teller and other famous scientists... Typical of his early years in Budapest was his desire to study music. But as a result of anti-Jewish laws, he had to study in Paris first and then in Berlin. There he worked for a doctorate under Franz Eugen Simon. The two men became close collaborators, but -both being Jewish- they prudently decamped upon the rise of Hitler, finding refuge at the Clarendon Laboratory in Oxford (1933-1940).

There they followed their research in magnetism and low temperature physics, but, at the outbreak of war, they worked on the atomic bomb project (they were not regarded as sufficiently secure to participate to radar studies). Back at the Clarendon in 1945, Nicholas Kurti and Simon used magnetism to obtain the lowest possible temperatures. They invented the nuclear adiabatic demagnetization method in 1956.

Nicholas Kurti did not stand at that point. As he was rising to professorship of physics in Oxford, to fellowship of Brasenose College (he was also visiting professor in many universities all around the world, member or head of more than 20 scientific committees or organization, where he brought his clear point of view), he worked on history of science, science policy, applications of thermodynamics to energy. Obviously he received many honours appropriate to such a tremendous amount of work and care: he was member of a dozen academies and he got prizes as the Holweck Prize (British and French Physical Societies), the Fritz London Award, the Hughes Medal...

Then, after the 1970's, he became interested in what was later called Molecular Gastronomy

He never gave explicit advices. Except one : « *Let us have simple experiments* ».

*«It is a sad reflection that we know better the temperature inside the stars than inside a soufflé».*  
(Nicholas Kurti)

# Schedule

## Tuesday June 1st

### 9.00-10.00 : Opening session

Hervé This : Introduction (MPG, the IWMPG, active workshops)

Roisin Burke: Suspensions – Introduction to the Note by Note assignment in TU Dublin in advance of Friday's Note by Note contest

Dan Vodnar : Suspensions in probiotic drinks (By-Pro-Gut)

Presentation of the participants

### 10.00-12.00h: Session 1

Hervé This : How many different complex suspensions do exist? (Using the Disperse System Formalism, DSF)

### 14.00h-15.00h: Session 2

Doughs and batters

15.00-15.30 : Break

### 15.30-17.00h: Session3

Suspended drinks (smoothies, etc.)

## Wednesday June 2nd

### 09.30h-10.30h: Session 4

Rheology of suspensions (viscosity, visco-elastic behaviours...)

Dan Vodnar : Influence of probiotic cocultures on soy-wheat flour dough, rheological properties

Rheology in the kitchen? Ingredients, recipes and equipment?

10.30-11.00h: Break

### 11.00-13.00h: Session 5

Famous recipes where rheology is important?

### 14.00h-15.00h: Session 6

Sauces (veloutés, etc.)

Reine Barbar : Analytical exploration of elementary production steps of Hommos Bi Tahiné

Reine Barbar : Exploration and development of colloidal stability of lebanese milk fermented products and drinks

Thomas Vilgis Stability of crystallising emulsions

Thomas Vilgis: Physics of milk emulsions

15.00h-15.30h : Break

**15.30h-17.00h : Session 7**  
**Note by note suspensions**

## **Thursday June 3rd**

**09.30h-10.30h: Session 8**  
Suspensions in education

10.30-11.00h: Break

**11.00-13.00h: Session 9**

Rheology of alternative meat products: plant, algal, insects and other  
Thomas Vilgis: Physics of fluid gels

14.00h-15.00h: Session 10

Roisin Burke : Rheology of 3D printed foods  
Hervé This : Note by note suspensions

15.00h-15.30h : Break

**15.30h-17.00h : Session 11**

Education  
Reine Barbar: tradition and innovation in suspensions for engineering education

## **Friday June 4th**

The Final Event of the 8<sup>th</sup> and 9<sup>th</sup> International Contest for Note by Note Cooking will take place in the afternoon, from 14.00h to 18.00h.

