Processing or reading images involves impressions and feelings in combination with information. This is what allows visuals influence us emotionally, on a deeper level than words.

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MOLECULAR GASTRONOMY

Molecular gastronomy is the scientific discipline concerned with the physical and chemical transformations that occur during cooking. The name is sometimes mistakenly given to the application of scientific knowledge to the creation of new dishes and culinary techniques.

The scientific discipline was introduced under the name molecular and physical gastronomy and later shortened to molecular gastronomy. It was established in 1988 by Hervé This, a physical chemist, and Nicholas Kurti, a former professor of physics at the University of Oxford, who were interested in the science behind the phenomena occured during culinary processes [1].

Apart from this, molecular gastronomy also incorporates the social and artistic components. It is distinct from the traditional food science, which is focused on food production on an industrial scale, nutrition and food safety. Until the establishment of molecular gastronomy, there was also no scientific discipline studying the chemical processes of cooking at home or in the restaurants – as opposed to food preparation for the mass market.

Today the term is very often connected with chefs wielding liquid nitrogen, pipettes, edible gels, blowtorches and other equipment usually used in a laboratory. Molecular gastronomy also studies heat conduction, convection and transfer, physical aspects of food/liquid interaction, stability of flavor, solubility problems, dispersion, and texture/flavor relationship. Understanding the science of cooking can lead to seemingly bizarre dishes that are unexpectedly delicious. Very often it is all about integrating what is already known into something totally new. Some examples of molecular gastronomy foods are a miniature apple that is made to taste like meat, cocktails in ice

spheres, fake caviar made of olive oil, transparent raviolis, spaghetti made from vegetables, instant ice cream and many others.

Though molecular gastronomy is based on science it is still a mix of science and art of cooking.

All prepared food dishes are examples of a mixture known as a colloid. A colloid is a material composed of tiny particles of one substance that are dispersed, but not dissolved, in another substance. The mixture of the two substances is called a colloidal dispersion or a colloidal system [1].

Molecular gastronomists use special techniques, ingredients and cooking principles to encourage certain chemical reactions to occur. These reactions, in turn, produce startling new flavors and textures.

One technique is spherification which is a nice example of the knowledge transfer from the science laboratory into the kitchen. It relies on a simple gelling reaction between calcium chloride and alginate. For example, to make apple caviar, you first mix calcium chloride and apple juice. Then you mix alginate into water and allow the mixture to sit overnight to remove air bubbles. Finally, you delicately drop the calcium chloride/apple juice mixture into the alginate and water. The calcium chloride ions cause the long-chain alginate polymers to become cross-linked, forming a gel. In laboratory this technique is used to encapsulate cells or provide cell carriers for cell culture.

Flash Frozen: with this molecular gastronomy technique, food is frozen almost immediately often by using liquid nitrogen. This allows the water inside fruits, vegetables and other fruits to freeze without creating large crystals or damaging the cell membranes, thus preserving the texture of frozen foods. The technique is typically used to develop semifrozen desserts with stable, crunchy surfaces and cool, creamy centers.

Deconstructed: if you deconstruct a sand castle, you knock it down. This same idea applies to deconstructed dishes, which feature separate building blocks instead of having everything combined. Deconstructed dishes allow the diner to construct a customized experience in his or her mouth.

Edible Paper: made with potato starch and soybeans, these tasty sheets of paper are often printed with edible fruit inks from a laser printer.

Powdered Food: chefs use maltodextrin, a starch-like substance, to turn a high-fat liquid like olive oil into a powder.

Flavor juxtaposition is one of the most important tenets of molecular gastronomy. Hervé This says juxtaposition can be used to intensify a more flavorful ingredient by pairing it with a much less flavorful ingredient. Or you can combine two dominant flavors, such as chocolate and orange, to reinforce the taste of both.

Here are some tools you might need to master molecular gastronomy:

– vacuum machine. A good model will evacuate the air from plastic bags and then seal the bag tightly closed. You can also buy a thermal bath to provide precise heating of your water bath;

– hypodermic syringe. Syringes are helpful in the process of spherification. Some chefs also use them to inject liquids into meat to enhance flavor and texture;

– liquid nitrogen. At a temperature of -321 degrees F (-196 degrees C), liquid nitrogen will flash freeze any food it touches. As it boils away, it gives off a dense nitrogen fog that can add atmosphere and drama to food preparation. A safer alternative is the Anti-Griddle, described next;

– anti-Griddle. The Anti-Griddle, a product of PolyScience, looks like a traditional cooktop, but it doesn't heat up food. Its 30 degrees F (-34 degrees C) surface instantly freezes sauces and purées or freezes just the outer surfaces of a dish while maintaining a creamy center;

– the Gastrovac. The Gastrovac is three tools in one: Crock-pot, a vacuum pump and a heating plate. The Gastrovac cooks food faster at lower temperatures, which helps the food maintain its texture, color and nutrients [**Ошибка! Источник ссылки не найден.**].

We've already discussed alginate and calcium chloride – the two chemicals needed for spherification. Another important gelling agent is methylcellulose, which congeals in hot water, then becomes liquid again as it cools. Emulsifiers are a must for maintaining a uniform dispersion of one liquid in another, such as oil in water. Two popular emulsifiers are soy lecithin and xanthan gum. Finally, more and more molecular gastronomists are turning to transglutanimase, a chemical that causes proteins to stick together. Because meat is protein, chefs can do inventive things with transglutaminase, such as removing all fat from a steak and gluing it back together or fashioning noodles from shrimp meat.

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