



# INTRODUCTION TO MOLECULAR GASTRONOMY



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## MOLECULAR GASTRONOMY TECHNIQUES

Natural texturing agents can now be used to deconstruct any dish or cocktail thanks to 4 spectacular molecular techniques.

### GELIFICATION

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Wrap your fruit salad into a sheet of rum, create parmesan-based spaghetti or bring a melt-in-the-mouth effect to your edible cocktails.



### SPHERIFICATION

Cl Sa



Encapsulate your Irish cream into a large sphere or add some fruit juice based caviar to your drink to create a burst of flavor in your mouth.



### EMULSIFICATION

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Deconstruct almost any watery solution into light foams for a modern touch that will liberate and intensify flavors.

### SIPHON WHIPPING

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Create low-fat whipped cream or simply add a creamy touch to your desserts, cocktails, appetizers and side dishes.





## TIPS & TRICKS

**OUR BEST TIP: START EXPERIMENTING WITH THE RECIPES INCLUDED IN THIS BOOKLET!**

### GELIFICATION

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Gelification is the process of turning a liquid into a gel. This process can result in various textures ranging from a soft and elastic gel to a hard and brittle one. In the Cuisine R-EVOLUTION kit, agar-agar is used to deconstruct liquids into pearls, sheets and spaghetti. Agar-agar needs to be brought to a boil to be activated and gelification will occur when the mixture is cooled down. In the Cocktail R-EVOLUTION kit, agar-agar is substituted by a cold soluble gelatin to avoid the evaporation of alcohol.

#### AGAR-AGAR PEARLS:

- To speed up the gelification progress, the oil used to cool down the mixture must be very cold.
- To obtain uniform round shaped pearls, the gelification needs to be completed before the drops reach the bottom of the glass. A tall glass is therefore recommended as this permits more time for the cooling process to occur.
- Do not be alarmed if the first few drops of hot agar-based mixture stay on the surface of the glass of oil. The pearls will eventually sink as more hot drops are added.

#### AGAR-AGAR SPAGHETTI:

- If the spaghetti tends to be brittle and break in small pieces, simply add some additional liquid to the mixture and reheat it; avoid boiling. Restart the spaghetti formation steps.
- If spaghetti is too soft and does not hold the desired shape, gradually add some additional agar-agar to the mixture and bring it to a boil. Restart the spaghetti formation steps.

#### MARTINI BITES MADE OUT OF COLD SOLUBLE GELATIN:

- Cold soluble gelatin has to be mixed with icing sugar prior to being dissolved in water.
- To avoid clumping, gradually pour the gelatin/sugar into the mixture while mixing with a hand blender; some egg beaters are not powerful enough to properly dissolve the gelatin.
- To produce a firmer gel, leave the mixture in the fridge longer, until the desired texture is achieved.

### SPHERIFICATION

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Spherification is the process of encapsulating a liquid into a sphere that will pop in the mouth! This is achieved when a very thin gel membrane is formed around a liquid thanks to a reaction that occurs between sodium alginate and a calcium salt such as calcium lactate. Spheres can vary in size ranging from small caviar beads to much larger ravioles. Carefully follow each recipe as there are various spherification methods.

#### SODIUM ALGINATE DISSOLUTION:

- To avoid clumping, the use of a hand blender is preferred as some egg beaters are not powerful enough to properly dissolve the sodium alginate.
- When not in contact with calcium, sodium alginate acts more like a thickening agent, so when blended a lot of air will be trapped in the solution. Allow the solution to rest so that the air bubbles escape from the alginate bath.

#### CAVIAR SERVING:

- The spherification process used to create caviar will not stop after the pearls are rinsed. Membranes will get thicker and thicker until the beads are completely congealed. Therefore, it is best to serve immediately to ensure that the interior of the caviar remains liquid.

#### RAVIOLES TECHNIQUES AND SERVING:

- The measuring spoons are used in various ways from one recipe to another to control the quantity of liquid dropped into the alginate bath. Pay careful attention to the technique used in the recipe video to achieve the desired result.
- Gently stir the ravioles in the alginate solution so that the thin gel membrane is uniform. The longer the sphere is left in the alginate bath, the thicker its membrane will be.
- Raviolis should never touch each other because unformed membranes can stick together and break.

## EMULSIFICATION

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In molecular gastronomy, emulsification is defined as the process of turning liquids into light foams that will liberate and intensify flavors. A property of soy lecithin is used to allow air bubbles to remain trapped into many liquids.

- To efficiently incorporate air into a lecithin-based solution, the use of a hand blender is preferred as some egg beaters are not powerful enough.
- To maximise results, slightly tilt the blender to allow the blades to almost reach the surface of the liquid and avoid completely immersing the head of the blender.
- The use of a flat-bottomed square bowl is suggested as it will help avoid the formation of whirlpools which would slow down the creation of the foam.
- The soy lecithin-based solution can be re-blended several times to obtain more foam.

## SIPHON WHIPPING

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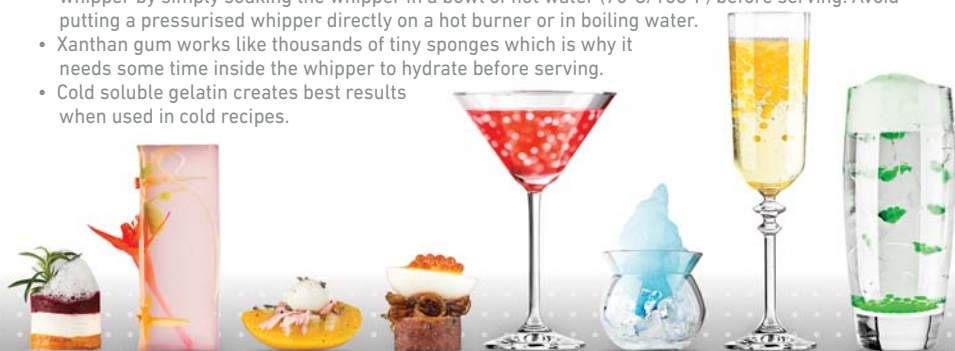
There is much more one can do with a culinary whipper than make whipped cream! For instance, xanthan gum can be used to replace the binding effect which is usually provided by the fat of cream to create an incredibly tasty low-fat whipped cream. Further, agar-agar allows the creation of warm mousses that can be served as appetizers or side dishes and cold soluble gelatin adds an exquisite melt-in-the-mouth effect to desserts!

#### GENERAL RULES:

- Never load more than one cartridge into the culinary whipper at a time.
- Before loading a cartridge, make sure that the lid is tightly sealed.
- The trigger is very sensitive. To avoid creating a mess, slowly press the trigger over the sink to let out a bit of air pressure.

#### ESPUMAS MADE OUT OF FOOD ADDITIVES:

- To serve warm espumas made out of agar-agar, mixtures can be warmed up directly in the culinary whipper by simply soaking the whipper in a bowl of hot water (70°C/158°F) before serving. Avoid putting a pressurised whipper directly on a hot burner or in boiling water.
- Xanthan gum works like thousands of tiny sponges which is why it needs some time inside the whipper to hydrate before serving.
- Cold soluble gelatin creates best results when used in cold recipes.



# CUISINE R-EVOLUTION



ALL RECIPES ARE AVAILABLE IN A  
PRINTABLE VERSION ON THE DVD

## START WITH THE FOLLOWING 3 RECIPES:

### EMULSIFICATION LEMON CLOUD

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#### ADDITIVE

- 1 sachet (2 g) SOY LECITHIN

#### INGREDIENTS

- $\frac{2}{3}$  cup water
- $\frac{2}{3}$  cup lemon juice

#### DIRECTIONS

1. Combine lemon juice, water and soy lecithin in a bowl.
2. Using a hand blender or an egg beater, mix the ingredients together until a foam is formed. Using a spoon, remove the foam and place on top of your dish.

### GELIFICATION BALSAMIC VINEGAR PEARLS



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#### ADDITIVE

- 1 sachet (2 g) AGAR-AGAR

#### INGREDIENTS

- olive oil
- $\frac{1}{2}$  cup balsamic vinegar

#### DIRECTIONS

1. Place a tall glass of olive oil in the freezer allowing it to chill for 30 minutes.
2. Place the vinegar and the agar-agar sachet in a pot and bring to a boil.
3. Pour the vinegar/agar-agar solution into a bowl and fill a pipette with this solution.
4. Remove the oil from the freezer and begin to slowly drip the vinegar liquid from the pipette into the oil.
5. Using the slotted spoon, remove the vinegar pearls from the oil. Rinse the vinegar pearls in water and remove them with the slotted spoon. Serve on desired dish.  
(You could also leave the pearls in olive oil to be used at a later time.)

### SPHERIFICATION YOGURT RAVIOLES



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#### ADDITIVES

- 1 sachet (2 g) SODIUM ALGINATE
- $\frac{1}{2}$  teaspoon CALCIUM LACTATE

#### INGREDIENTS

- 2 cups water
- $\frac{1}{3}$  cup milk
- $\frac{1}{2}$  cup 2% plain yogurt

#### DIRECTIONS

1. Place sodium alginate and 2 cups of water into a bowl.
2. Using a hand blender or egg beater, dissolve the sodium alginate into the water.
3. Set the sodium alginate/water mixture aside for 15 minutes to remove air bubbles.
4. Dissolve the calcium lactate in the milk and yogurt using a spoon.
5. Fill one of the measuring spoons with the yogurt mixture and slowly drop it into the sodium alginate bath. Gently stir the spheres for 3 minutes to allow the membrane to form.
6. Using the slotted spoon, remove the raviole from the sodium alginate bath.
7. Rinse the yogurt raviole in a bath of water and remove it using the slotted spoon.
8. Serve on desired dish.

# COCKTAIL R-EVOLUTION



ALL RECIPES ARE AVAILABLE IN A  
PRINTABLE VERSION ON THE DVD

## START WITH THE FOLLOWING 3 RECIPES:

### EMULSIFICATION MARGARITA, SALT FOAM

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#### ADDITIVE

- 1 sachet (2 g) SOY LECITHIN

#### INGREDIENTS

- 1 tbsp salt
- 1½ cups water
- 1½ oz (45 ml) tequila
- a dash of citrus liqueur
- lime juice (to taste)
- lime wedge

#### DIRECTIONS

1. Place soy lecithin, salt and water into a bowl.
2. Using a hand blender or egg beater, mix the ingredients together until a foam is formed.
3. Pour tequila, citrus liquor and lime juice into a glass. Place a spoon of foam on top of the drink.
4. Place a wedge of lime on the side of the glass for decoration.

### SPHERIFICATION MOJITO BUBBLES



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#### ADDITIVES

- 1 sachet (2 g) SODIUM ALGinate
- ¼ tsp CALCIUM LACTATE

#### INGREDIENTS

- 1 tsp of sugar
- 3 lime wedges
- 12 fresh mint leaves
- 1½ oz white rum
- ¼ cup club soda
- a dash of lime juice
- 2 cups water

#### DIRECTIONS

1. Place calcium lactate, sugar, lime and mint leaves into a bowl. Crush and mix the ingredients together. Pour white rum and soda water into the mixture.
2. Take an ice mold, ideally a spherical one, and place a small mint leaf in each compartment.
3. Using a sieve, filter the mixture, fill the mold with the liquid solution and put into the freezer.
4. Place sodium alginate and 2 cups of water into a dish. Using a hand blender or egg beater, dissolve the sodium alginate into the water and set this mixture aside for 15 minutes to remove air bubbles.
5. Remove the ice cubes from the mold and place them in the sodium alginate bath.
6. Gently stir the spheres for 3 minutes to allow the membrane to form.
7. Using the pierced spoon remove the mojito bubbles from the alginate bath.
8. Rinse the spheres in a water bath and remove them using the slotted spoon.
9. Place the mojito bubble on a spoon for presentation purposes.

### SPHERIFICATION GIN TONIC



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#### ADDITIVES

- 1 sachet (2 g) SODIUM ALGinate
- 1 sachet (5 g) CALCIUM LACTATE

#### INGREDIENTS

- 1⅓ cups tonic water
- ½ oz (15 ml) blue curaçao
- 4 cups water
- 2 oz (60 ml) gin
- slices of lime

#### DIRECTIONS

1. Place sodium alginate, tonic water and blue curaçao into a bowl. Using a hand blender or an egg beater, mix the ingredients together and set this mixture aside for 15 minutes to remove air bubbles.
2. Dissolve the calcium lactate in 4 cups of water in a separate bowl by gradually stirring with a spoon.
3. Fill a pipette with the alginate/tonic/curaçao mixture and begin to slowly drip the alginate/tonic/curaçao mixture from the pipette into the calcium lactate bath.
4. Using the pierced spoon remove the blue caviars and rinse them in a water bath, then remove with the slotted spoon.
5. Place the blue caviars into a glass and add gin.



# SIPHON R-EVOLUTION

GAS CARTRIDGES & ADDITIVES AVAILABLE  
ON [WWW.MOLECULE-R.COM](http://WWW.MOLECULE-R.COM)

## START WITH THE FOLLOWING 3 RECIPES:

### SIPHON WHIPPING LOW-FAT WHIP CREAM



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#### ADDITIVES

- 1 sachet (1 g) XANTHAN GUM
- 1 N2O gas cartridge

#### INGREDIENTS

- 1 cup half and half cream (15%)
- 1 cup skim milk (1%)

#### DIRECTIONS

1. Place cream and milk in a blender while gradually incorporating the xanthan gum.
2. Pour contents into the culinary whipper.
3. Insert one gas cartridge into the culinary whipper according to instructions.
4. Place Culinary Whipper in the fridge for 1 hour.
5. When ready, shake the culinary whipper for 8 seconds and serve.

### SIPHON WHIPPING COFFEE MOUSSE



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#### ADDITIVES

- 1 sachet (4 g) COLD SOLUBLE GELATIN
- 1 N2O gas cartridge

#### INGREDIENTS

- ¾ cup espresso
- 1 cup whipping cream (35%)
- 3 tbsp sugar

#### DIRECTIONS

1. Place espresso and sugar into a blender. Gradually add the gelatin to the mixture while blending.
2. Place mixture in a pot on low heat and gradually add the cream. DO NOT BOIL.
3. Pour mixture into the culinary whipper and insert one gas cartridge according to instructions.
4. Place culinary whipper in the fridge for 2 hours.
5. When ready, shake the culinary whipper for 3 seconds and serve.

### SIPHON WHIPPING ASPARAGUS ESPUMA



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#### ADDITIVES

- 1 sachet (2 g) AGAR-AGAR
- 1 N2O gas cartridge

#### INGREDIENTS

- asparagus (for 6/7 cup of puree)
- 1 cup chicken broth
- ½ cup whipping cream (35%)

#### DIRECTIONS

1. Boil asparagus and place in a blender to form a puree.
2. Pass the puree through a sieve to ensure a smooth texture.
3. Place 6/7 of a cup of the puree into a blender with the chicken broth and gradually add the agar-agar while blending.
4. In a pot, bring to a boil and gradually incorporate the cream.
5. Pour the mixture into a bowl and set aside for one hour in the fridge or until congealed.
6. Blend again to obtain a creamy texture and pour contents into the culinary whipper.
7. Insert one gas cartridge into the culinary whipper according to instructions.
7. Shake the culinary whipper for 8 seconds and serve.