



NOTE-BY-NOTE CUISINE

Snow Egg by Kruti Anegundi

Equipment:

Name	Quantity
Small pots	x2
Whisks	x1
Immersion blender	x1
Oven	x1
Sphere silicon mould	x1
Microwave	x1
iSI gun	x1
Freezer	x1
3D printer	x1
Silicon Mat	x1
Rotary evaporator	x1
Trays	x2
Slotted spoons	x1
Bowls	x6
Glass (plating)	x1
Precision micro-scale	x1

Recipe and Method

Meringue: (*Burke et al., 2021*)

Ingredients	Quantity	Brand	Composition
Water	100g	Tap water	H ₂ O
Albumin Powder	10g	Sosa Albuwhip	Albumin (Amino Acid)
Salt	1g	Table salt	Sodium Chloride
Sucrose	0.2g	Bulk Sports supplements	Sucralose (E955)
Flavor	0.15g	Culinaide Banana	Water, Mono Propylene Glycol,

Method:

- In water, add salt, sucrose, and flavor till it dissolves.
- Then add albuwhip powder and start whisking.
- Whisk till it starts to form stiff peaks like meringue.
- Once done, pour into individual moulds and microwave it for 15-20 seconds or double in size.
- Let it cool and then demould for use.



Gel (Yolk): (*Molecular Gastronomy*, 2013)

Ingredients	Quantity	Brand	Composition
Water	100g	Tap water	
Aroma	0.15g	Culinaide Banana	Water, Mono Propylene Glycol,
Color	0.2g <	Mallard Ferriere	Yellow E102, E422, E406
Calcium Lactate	2.5g	MSK ingredients	Lactate
Xanthan Gum	0.4g	En place foods	Xanthan
Alginate bath:			
Water	990g	Tap	H2O
Sodium Alginate	10g	Sosa	Sodium Alginate (E401)
Sucralose	0.2g	Bulk Sports	Sucralose (E955)

Method:

- Prepare Alginate bath: combine sugar and alginate in water and whisk. Let it sit for 10 minutes to hydrate.
- Prepare the Flavored liquid: Heat 100g of water until lukewarm, add calcium lactate, and stir till dissolved. Add xanthan gum and blend till combined. Then add color and aroma. Chill in the fridge for 10 minutes to remove air bubbles.
- Form the yolk: Fill a small spoon full of the flavored liquid (you can use a dropper or a squeeze bottle as well). Gently drop into the alginate bath and hold for a few seconds until it forms a thin solid layer on the surface of the liquid. Remove it with a slotted spoon, then drop it into a bowl of water to wash off the alginate on top of the sphere.



Maltodextrin Soil: (*Lersch, 2015*)

Ingredients	Quantity	Brand	Composition
Coconut oil	20g	KTC Food Group	Lauric acid (C12:0) [45-50%], Myristic acid (C14:0) [16-20%], palmitic acid (C16:0) [8-9%], Capric acid (C10:0)
Coconut natural flavor powder	10g	Culinaide	Natural plant fibers, Mono propylene Glycol (E1520), Natural flavoring substance
Maltodextrin	25g	Sosa	Sodium Carboxymethyl cellulose (E466)

Method:

- In a small bowl, measure out the coconut oil and melt it in the microwave. Then add the coconut-flavored powder to the melted oil. Let it cool to room temperature

- Start whisking maltodextrin into the oil mixture in parts, until it forms a dry soil texture.
- Can be stored in a vacuum-sealed pack for long-lasting texture and smell.

Jasmine Granita: (*This, 2014*)

Ingredients	Quantity	Brand	Composition
Water	100ml	Tap water	H2O
Glucose	10g	DGF Services	Glucose Syrup, Sodium bi-sulphate
Color	0.1g <	Mallard	Pink E129
Flavor	0.12g	Sosa Jasmine	

Method:

- In a pan, heat the water up to 60 degrees and mix the glucose till completely dissolved.
- Remove from the heat and mix the flavor and color. Cool the mixture and then transfer it into small trays.
- Freeze the granita completely. Scrape the granita to form the broken ice texture right before plating.

3D Printed Feather adapted from 3D printed lobster: (*Burke et al., 2021*)

Ingredients	Quantity	Brand	Composition
Corn flour	66g	Gem pack foods ltd	Amylose (25%), Amylopectin (75%)
Sucralose	0.2g	Bulk Sports supplements	Sucralose (E955)
Soy Protein isolate	28g	Bulk UK	Glycinin (11S) [52%], b-conglycinin (7S) [35%]
Salt	1g	Table salt	Sodium Chloride
EV olive oil	14g	Urzante	Olive oil (triglycerides 97%) (Oleic Acid)
Water	120g	Tap water	H2O

Method:

- Measure out all the dry ingredients in a bowl and wet ingredients in a separate bowl. Start pouring the wet ingredients into the flour while slowly mixing it.
- Form a semi-soft dough that resembles the dough of wet sand.

- The cartridge was filled with the piping bag up to the 60 mL mark, taking care to avoid air bubbles. The dosing tip was screwed onto the cartridge. “Pasta” was selected from the food items in the user interface, and the cartridge was inserted into the printer. Decide Dimension, Choose design.



Mousse: (*molecular recipes*, 2014) (, 2014)

Ingredients	Quantity	Brand	Composition
Water	65g	Tap water	H2O
Sucrose	0.1g	Bulk Sports supplements	Sucralose (E955)
Oil	15g	Urzante	Olive oil (triglycerides 97%) (Oleic Acid)
Lecithin	1g	Texturas (Alberty Ferranadria)	Soy lecithin (E322)
Xanthan	0.3g	En place foods	Xanthan
Soy protein Isolate	6g	Bulk UK	Glycinin (11S) [52%], b-conglycinin (7S) [35%]
Aroma	0.2g	Culinaide	Water, Mono Propylene Glycol,

		Banana	
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Method:

- Heat water in a pan up to 45 degrees, add soy protein, sucralose, xanthan and blend to lump free
- Combine oil and lecithin in a bowl and start pouring into the above mixture in a thin stream while blending it with a hand blender.
- Once a thin mayonnaise consistency is formed, cool the mixture to room temperature.
- Transfer into the iSI gun and charge it with the nitro cartridge. Shake upside down vigorously right before using.



Curry leaf Aromatizer: (*Shepherd, 2024*)

- Bath temperature: 35-40 °C (gentle, prevents cooking the botanicals)
- Vacuum pressure: 40–80 mbar (low pressure keeps temperature low)
- Rotation speed: 90–120 rpm
- Chiller temperature: –5 to +5 °C. Run the distillation until you collect 200–350 mL of clear, aromatic distillate



Assembly:

Final assembly involved layering the Mousse and Granita in a transparent glass. Once the mousse was aerated in the iSI gun and released, the crushed granita was spread across with a small well in the centre. The two halves of the poached meringue were used as a sandwich for the sphere gel (yolk) and were placed in the created well. After it was positioned, the granita was used to cover the gaps for a seamless finish. The meringue was dusted with the coconut soil to create the illusion of snow. Finally, it was topped with the 3D printed protein crisp, and an aromatizer was sprayed lightly



(MasterChef World, 2023)

Cost:

The use of note-by-note cuisine contributed to a reduction in overall production costs by ensuring precise control over quantities and minimizing waste. Sweeteners, proteins, and hydrocolloids were added in small amounts, reducing reliance on traditional ingredients such as eggs, cream, and fruits, which are perishable. Additionally, the modular presentation of the components enabled scaling batches to demand and reduced overproduction and spoilage. The high stability of the ingredients further reduced losses, demonstrating that the molecular structures can confer advantages and improve economic efficiency in professional kitchens.

The total cost per dish for this NBN Snow egg was €2.635, which provides a clear indication of profitability for large-scale production. Here is a clear breakdown of the food cost.

(The estimated quantity per recipe is an average of 4 dishes)

Ingredients		Quantity	Units	Cost
Calcium lactate		2.5	g	0.16
Egg white powder		10	g	0.56
Extra Virgin olive oil		19	ml	0.87
Cornflour		22	g	0.26
Xanthan Gum (E415)		0.7	g	0.54
Lecithin E322		1	g	0.043
Maltodextrin		20	g	0.85
Coconut oil		20	g	0.555

Glucose syrup		10	g	0.06
Salt		0.5	g	/
Sodium alginate		10	g	1.29
Soy protein isolate		15	g	0.33
Sucralose		0.3	g	0.02
water		400	ml	/
Aroma (banana)		0.25	ml	0.018
Aroma (jasmine)		0.2	ml	0.46
Curry leaf		40	g	2.99
Vodka		40	ml	1.53
Colour (pink)		0.1		0.0021
Colour (Yellow)		0.1		0.0023
Total Cost	(4 plates)			10.5404
Per Dish				2.6351

Final Results of the Components:



Figure 1 Molecular Yolk



Figure 2 Poached meringue



Figure 3 Banana Mousse



Figure 4 Jasmine Granita



Figure 5 Coconut Soil



Figure 6 3D printed protein crisp



Figure 7 Curry leaf aromatizer

Conclusion

This project showed that note-by-note cooking can be used to reimagine a complicated dessert based on Peter Gilmore's Snow Egg. The dish accomplished structural stability, sensory coherence, and eye appeal by building each part from separate compounds instead of using everyday ingredients like eggs, dairy, or fruit.

The final result showed that judicious use of proteins, hydrocolloids, and aroma compounds can recreate key flavor and texture attributes while also improving production and nutritional efficiency. Sensory evaluation indicated positive acceptance and validated the effectiveness of the molecular design approach.

Did you achieve your aim- reduce production costs, time and calories without compromising the flavour?

Overall, the project supports the use of note-by-note cuisine as a practical and innovative

methodology in contemporary gastronomy, offering potential applications in low-calorie dessert design, sustainability-focused cooking, and culturally expressive culinary development.

References:

1. Barham, P., Skibsted, L.H., Bredie, W.L.P., Bom Frøst, M., Møller, P., Risbo, J., Snitkjær, P. and Mortensen, L.M. (2010). Molecular Gastronomy: A New Emerging Scientific Discipline. *Chemical Reviews*, 110(4), pp.2313–2365. doi: <https://doi.org/10.1021/cr900105w>.
2. Burke, R.M., Kelly, A.L., Lavelle, C. and Kientza, H.T. vo eds., (2021). *Handbook of Molecular Gastronomy*. First edition. | Boca Raton: CRC Press, 2021.: CRC Press. doi: <https://doi.org/10.1201/9780429168703>.
3. Debevoise, M.B. and This, H. (2014). *Note-by-Note Cooking: The Future of Food*. New York: Columbia University Press.
4. Shepherd E. (2024). *The Rotavap | Food & Drink Techniques and Long-Term Review*. [online] YouTube. Available at: <https://www.youtube.com/watch?v=U-N23h2tcnA>
5. Europa.eu. (2023). *Consolidated TEXT: 32008R1333 — EN — 22.03.2023*. [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02008R1333-20230322#M7-12>
6. Food Safety Authority of Ireland. (2024). *List of Additives | Food Safety Authority of Ireland*. [online] Available at: <https://www.fsai.ie/enforcement-and-legislation/legislation/food-legislation/food-additives/additives-list#>
7. Ivanovic, S., Kresimir Mikinac and Perman, L. (2011). Molecular Gastronomy in Function of Scientific Implementation in Practice. *Econstor (Econstor)*, 2(2), pp.139–150.
8. Lersch, M. ed., (2015). *Texture – Khymos*. [online] Khymos.org. Available at: <http://blog.khymos.org/recipe-collection/>
9. MasterChef World (2023). *Replicating Peter Gilmore’s Snow Egg | MasterChef Australia | MasterChef World*. [online] YouTube. Available at: <https://www.youtube.com/watch?v=BU36rXtFdLA>.

10. Molecular Gastronomy (2013). *Molecular Gastronomy: Reverse Spherification to Make Spheres with Liquid inside*. [online] YouTube. Available at: <https://www.youtube.com/watch?v=JPNo79U77yI>
11. molecular recipes (2014). Coffee and Milk Mousse. Available at: http://www.molecularrecipes.com/?no_redirect=true.
12. Re-evaluation of Approved Food Additives in Accordance with Regulation (EC) No 1333/2008 of the European Parliament and of the Council on Food Additives. (2010). Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:080:0019:0027:EN:PDF>.
13. This, H. (2013). Molecular gastronomy is a scientific discipline, and note-by-note cuisine is the next culinary trend. *Flavour*, 2(1). doi: <https://doi.org/10.1186/2044-7248-2-1>.
14. ThisH. (2009). Molecular Gastronomy, a Scientific Look at Cooking. *Accounts of Chemical Research*, 42(5), pp.575–583. doi: <https://doi.org/10.1021/ar8002078>.

Appendices

Picture reference of the final dish:



Figure 8 AI-generated intended outcome

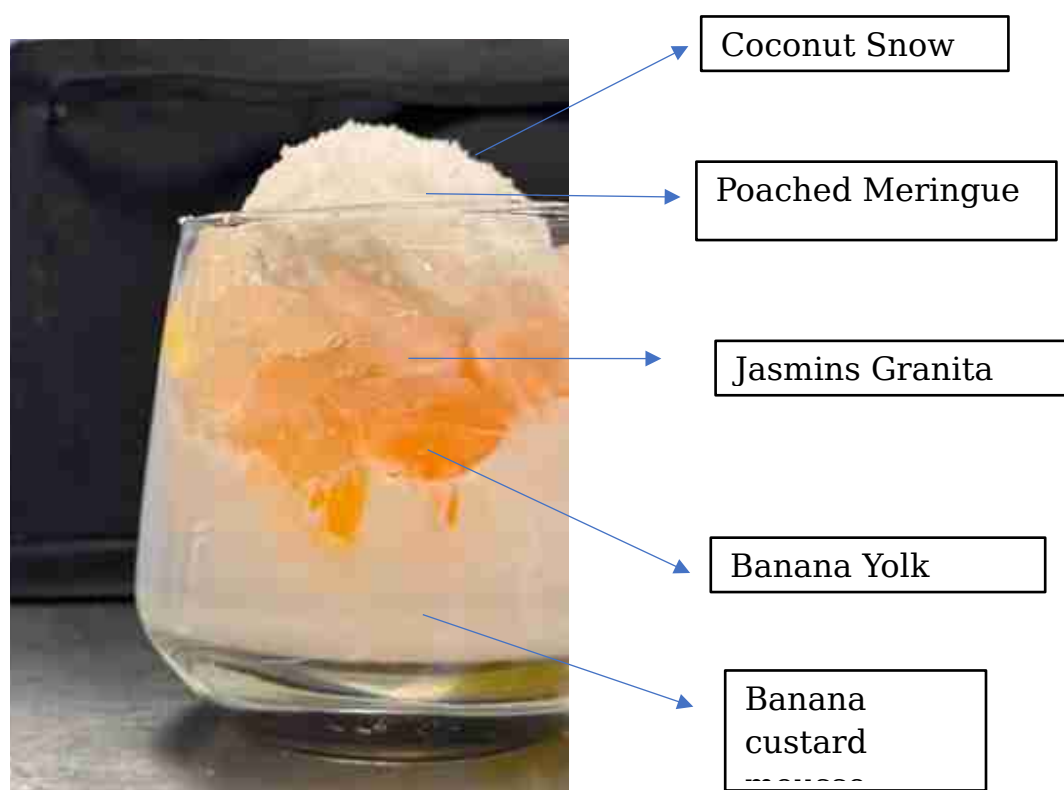


Figure 9 Outcome