Chocolate Mousse

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Abstract

Melt one tablet of chocolate. At the same time, separate the white and the yolks of six eggs. Beat the egg whites to make a stiff foam. Gently beat the yolks and mix with the melted chocolate. Fold in the chocolate mixture. Refrigerate for two hours.

I - Introduction

The chocolate mousse should be prepared a minimum of 2-3 hours and a maximum of 24 hours in advance.

For large quantities, it is better to prepare several consecutive batches: expect about 20-30 minutes for each one.

II – Materials and Methods

II.1 - Ingredients

1 batch of mousse (for 3 of large, 4 of medium, or 6 of small appetite):

- 200 g dark dessert chocolate (e.g., Nestlé, Vevey)
- 6 eggs
- 2 teaspoons water (optionally with instant coffee)
- 1 pinch of salt
- Optionally: crème fraiche [1], orange-flower water... or, for decoration: whipped cream and/or roasted almonds to sprinkle on the mousse just before serving.

Figure 1

Note: the figures correspond to five batches.

II.2- Equipment

- 1 egg-beater (or mixer with the appropriate accessory)
- 1 pot (or large bowl if a microwave oven is used)
- 1 cup for separating the eggs
- 1 large bowl, for the yolks
- 1 bowl (transparent if possible), for the mousse itself
- 1 large bowl, very clean (or the mixer bowl), for beating the egg whites
- 1 or 2 wooden spoons
- 1 fork
- 1 tablespoon
- Optionally: 1 plastic spatula
- Optionally: paper towels
- Some room for conducting the experiment

II.3 - Procedure:

Figure 2

- Break the eggs in a cup. Separate the whites and the yolks by passing the yolk between the half-shells (Fig. 2) and letting the white drip into the cup. Put the yolks in a big bowl. Remove remains of shells. Move the whites to a bowl, after verifying that there is no yolk in the egg-white mixture (tip : separate each egg one at a time in a cup, to avoid contaminating the whites with yolk ; use unsuccessful attempts for an omelet).
  PS: save the half-shells, in case the shell of the next egg is crushed...

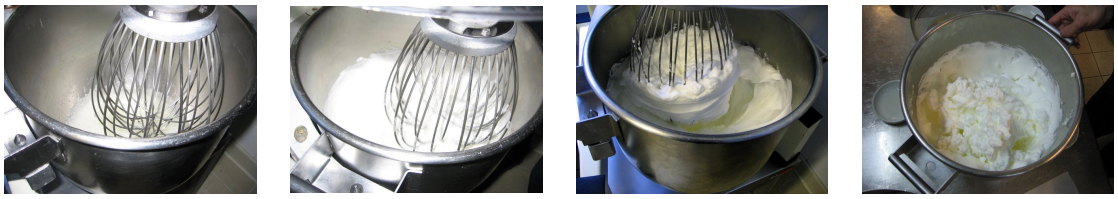
Figure 3

- Repeat the above for the remaining eggs (a total of six eggs); add the salt to the egg-white mixture.
- Beat the yolks with a fork or an egg-beater (Fig. 3).

Warning: the two following steps need to be done quickly (if the chocolate cools, it becomes too hard; if the beaten whites are left standing for too long, they will collapse).

Figure 4

- Break the chocolate into cubes (Fig. 1), and heat them with the water on a low heat, stirring with a wooden spoon (with a microwave, heat for 1 minute at high power or 2½ minutes on defrost, then stir and reheat for ½ to 1 minute). Pour into the mixture of yolks, and stir gently with a wooden spoon to obtain a smooth paste (Fig. 4). If too hard, add a tablespoon of water. If the water floats, pour it out.
- During this time, beat the egg-whites to a foam: first beat gently (Fig. 5a) until the mixture becomes white (Fig. 5b), then at maximum speed. Note the fine bubbles, the opacity of the foam and the increase in volume (Fig. 5c). Move the beater gently while beating, not too quickly. Stop when the foam is very stiff: you should be able to sculpt it (Fig. 5d). Optional: measure the shear modulus.



a **b** **c** **d**

Figure 5

- Gently fold the egg white foam into the yolks+chocolate mixture: use a wooden spoon (clean if possible; especially if you want to use the same bowl for another batch) to take some foam and put it in the mixture. Mix gently to homogenize. Add the foam a little at a time, mixing each time. Be careful not to break the small bubbles (Fig. 6).

a **b** **c**

Figure 6

- Pour the mixture gently into a transparent bowl (Fig. 7). Wipe traces of chocolate from the margins using a paper towel. Cover with aluminum paper. Put in a refrigerator for 2-3 hours.
  PS: if you make a second (and third) batch, repeat the procedure and pour into the same bowl, which is to be kept refrigerated.

Figure 7

- Serve the mousse directly after taking it out of the refrigerator (Fig. 8); test its consistency by turning the bowl upside down (over a plate, in case it falls). Optional: place in a synchrotron beam (Fig. 9).

III – Results

Mousse is obtained (Figs. 8, 9). It's good.

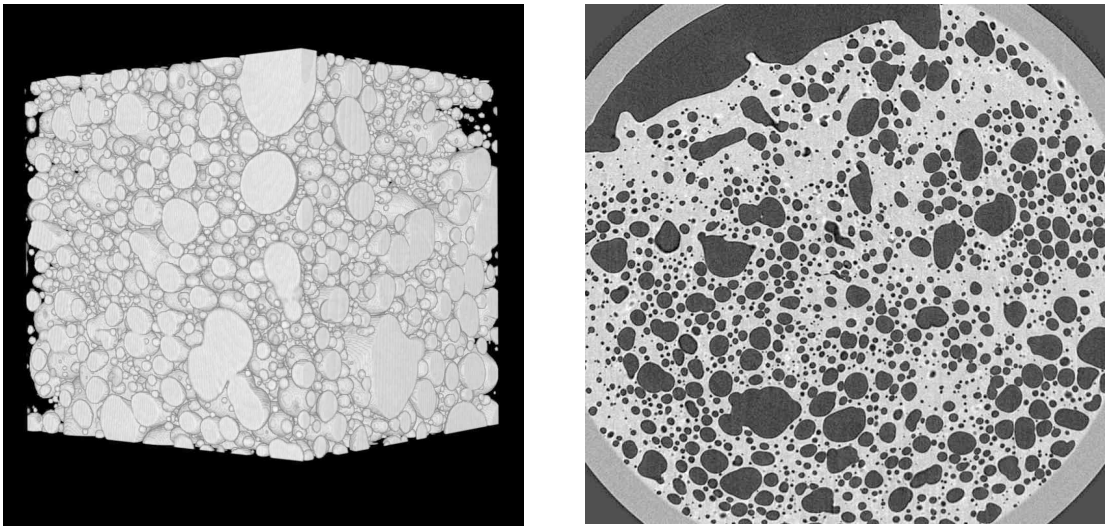
IV - Discussion

No discussion!

V – Conclusion

We tell you, it's good.

Figure 8



a b

Figure 9: Industrial chocolate mousse imaged using 3D tomography, at the ESRF synchrotron. Cylindrical sample of 1 cm diameter and 1 cm height, resolution of 10 μm (i.e., several hundred million voxels), exposure time 30 minutes. Taken by P. Cloetens, F. Graner: (a) three-dimensional view, reproduced from ref. [2], showing the bubbles (light); (b) a two-dimensional slice, showing the chocolate (light).

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