

A thick black L-shaped frame surrounds the text. It starts at the top-left, goes right, then down, then right again, and finally down to the bottom-right corner.

Advanced Solidification

Incentive Homework 1
Example of Superheating

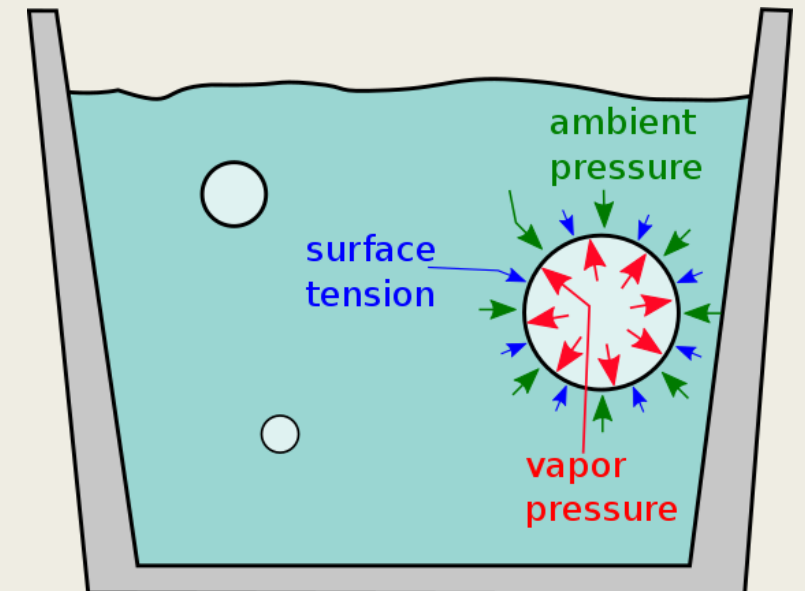
Superheating

Description

- The phenomenon in which a liquid is heated to a temperature higher than its boiling point, without boiling.
- Superheating is achieved by heating a homogeneous substance in a clean container, free of nucleation sites, while taking care not to disturb the liquid.

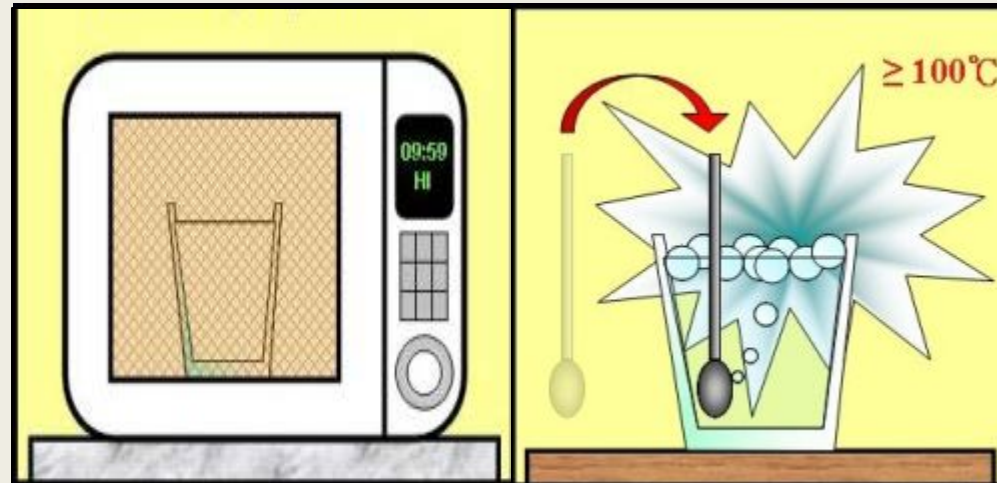
Cause

- For vapor to form and expand, the temperature of the liquid needs to be high enough that the vapor pressure of the liquid exceeds the vapor pressure of the air.
- During superheating, the liquid doesn't boil even though it is hot enough, usually because the surface tension of the liquid suppresses the formation of vapor.



Superheating Water in a Microwave

- Boiling of water occurs when bubbles of water vapor expand in liquid water and are released at its surface.
- When water is heated in a microwave, it may remain undisturbed during the heating process so that there are no nucleation sites around which bubbles may form.
- Bumping a cup of superheated water, adding another ingredient, or stirring the water may cause it to boil, suddenly and violently.
- The water may boil over the cup or spray out as steam.



References

- En.wikipedia.org. (2018). *Superheating*. [online] Available at: <https://en.wikipedia.org/wiki/Superheating> [Accessed 10 Sep. 2018].
- Hon, K. (2018). *Supercooling and Superheating*. [online] Hko.gov.hk. Available at: http://www.hko.gov.hk/education/edu06nature/ele_supercoolheat_e.htm [Accessed 10 Sep. 2018].