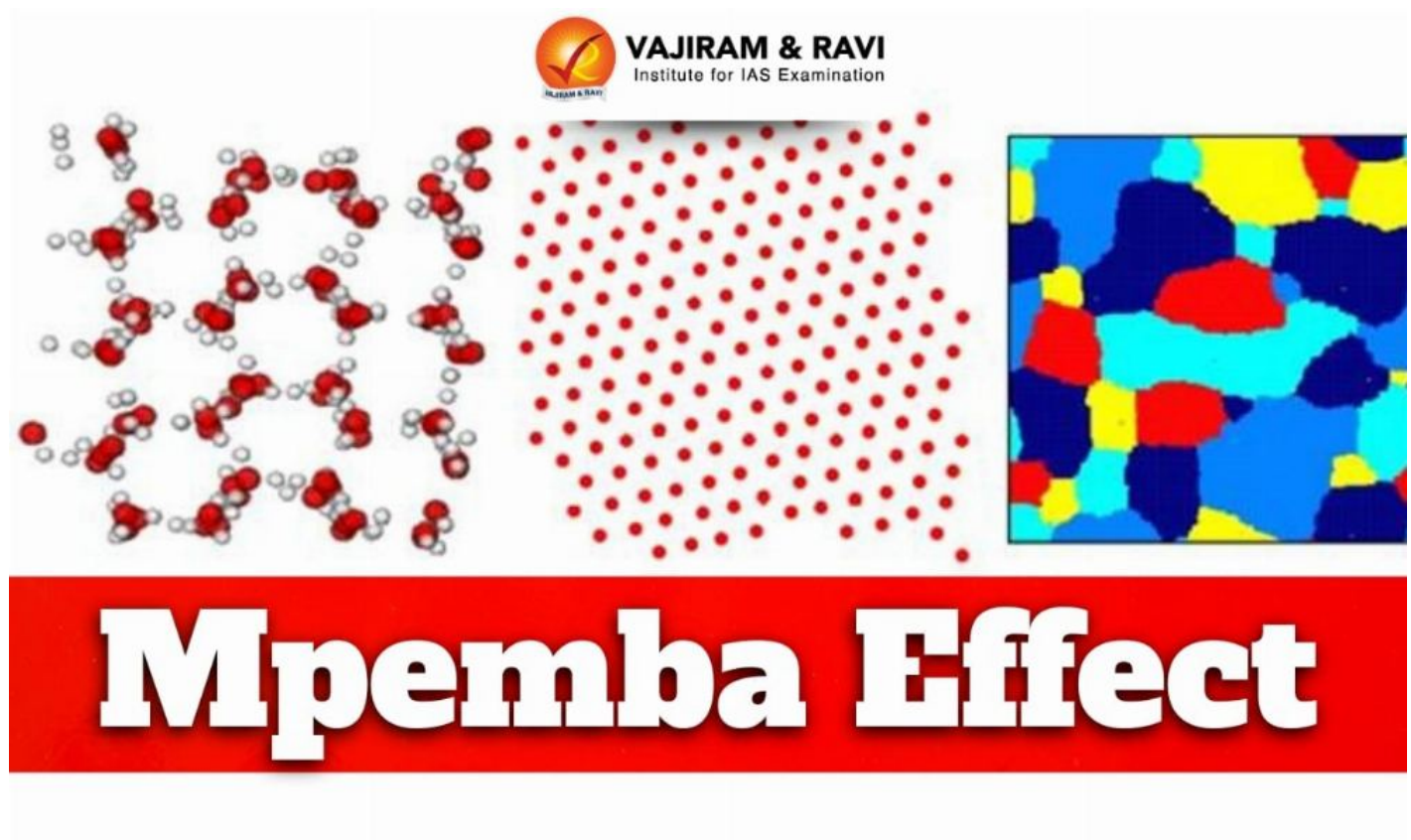


Mpemba Effect

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Mpemba Effect Latest News

Recently, researchers from Jawaharlal Nehru Centre for Advanced Scientific Research have used supercomputers to develop the first simulation of ice formation proving the Mpemba effect of water.

About Mpemba Effect

- Mpemba effect is a paradoxical phenomenon in which a **hot liquid can cool or freeze faster than a cold liquid** under certain conditions.
- The effect described by **Aristotle, in his book Meterologica**.
- It is named after **Tanzanian student Erasto Mpemba**, who brought attention to this counterintuitive phenomenon in 1969, making for curious observations.

Possible Explanations

- **Micro bubbles:** One cause, scientists have posited, is micro bubbles left suspended in water that has been heated by boiling.

- These cavities promote **convection and transfer heat faster** as the water cools.
- **Evaporation:** as warmer water evaporates more, it also takes away some heat (evaporation is inherently endothermic, which is how sweat cools your skin).
 - Both convection and accelerated heat transfer are enhanced in warmer water because such water is less dense.
- **Presence of frost in cold water:** Frost is an insulator and could **slow the loss of heat**.
- Scientists have also considered whether compounds in water like calcium carbonate could be precipitated by boiling, and then dissolve, thus increasing the water's freezing point.

Recent Findings related to Mpemba Effect

- The researchers also found that the Mpemba effect **is not unique to water**.
- The simulation demonstrates that **similar behaviour can occur during fluid-to-solid phase** transitions in other materials

Source: **PIB**

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