

Shades from Shapes

Workshop for Teachers- IMSc & HBCSE

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We are going to exchange notes...welcome!

► **Why should we teach Diffusion for class 7-10?**

1. It is in syllabus
2. We see this in everyday life, so students should learn
3. Anything else?

► **What do you expect them to learn about Diffusion?**

► **Where will they use this- Physics, Chemistry, Biology in School?**

Mention some situations when will they think of what you taught about this in classroom? List ten such situations.

- ▶ Daily life incidents
- ▶ Fumes, flavours, fragrance
- ▶ Size of particles and diffusion





Is Particle size important for diffusion?
Can you think of examples- Medicine, food....
What do you think may change with size?
GUESS....



Can u try devise an experiment to prove what you think?
DIFFUSION rate!





How to check concentration vs diffusion rate?

- ▶ Sugar syrup - Water
- ▶ Sat- water
- ▶ Dhoklas
- ▶ Anaemia , oxygen, girls health

How far does it go?

- ▶ Surficial or penetrate?
- ▶ Factors that determine this- GUESS
- ▶ Advantage and disadvantage -think

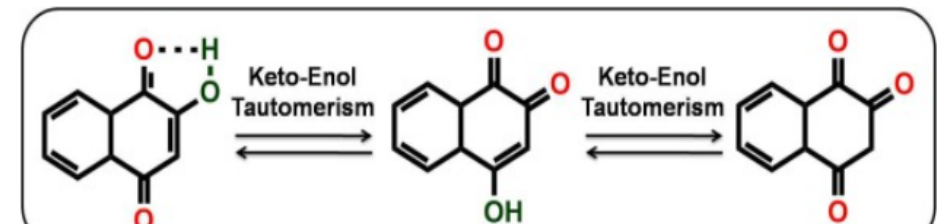


Can I have henna pattern on paper?

Presence of Medium accelerates or reduces speed!!

Why Tamarind or lime juice added with henna?

A few research groups [29,31,32] have reported the application of **henna** powder (*Lawsonia inermis*) to reveal latent fingerprints. Henna is a natural plant that contains the red-orange pigment lawsone. The various tautomeric forms of lawsone are portrayed in Fig. 17. During festivals and wedding celebrations, some populations such as Indians apply henna paste to their fingers and palms. The pigment lawsone is released only in acidic media. For this purpose, acidic food materials such as lemon or tamarind is added to the henna leaves and ground to a fine paste. Addition of sugar makes this paste sticky on the palms and fingers, enhancing the interaction between the stratum corneum, the outermost layer of the skin, and the lawsone pigment. The pigment will then migrate to the skin, where it will develop orange-red colouration. The diffusion of lawsone occurs deeply into the skin when the henna paste is applied for a long time. Some populations, such as Indians apply henna paste to their white hair to give it a redhead appearance. It's no surprise that researchers are using henna to detect latent fingerprints because they want to take advantage of the natural interaction between the henna and the skin.



Is diffusion a one way traffic?



- ▶ Potato in water
- ▶ Tea bag
- ▶ Turmeric piece
- ▶ Tomato
- ▶ Tamarind
- ▶ Lemon
- ▶ Pasta
- ▶ Rasam - turmeric in cold rasam

Shape vs Diffusion

- ▶ Why should you keep mass a constant
- ▶ Tall jar- tip - Bucket
- ▶ Thick and thin



Teach students to Think of various factors that may affect and control variables

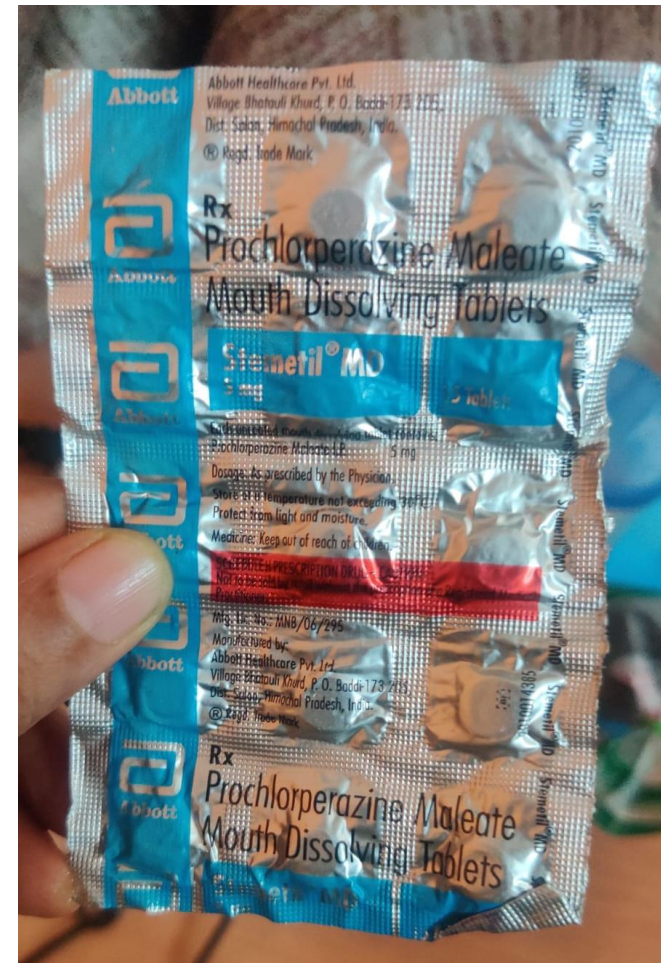
- ▶ What have I controlled here?
- ▶ What are the variable here?
- ▶ So how will they affect if they are not taken care of?
- ▶ Take guess!



Is there diffusion here?



Can you say why medium,
size, diffusion rate
important?



Next session...

- ▶ Diffusion and blood, saliva
- ▶ Diffusion and RO, water purification

- ▶ List out factors that affect diffusion.
- ▶ Quote examples where do you think diffusion needs to be slow
- ▶ What is infused oil?
- ▶ Come out with a idea of demonstration, tabular column, variables list to find out relation between diffusion and shapes?
- ▶ Have you seen Any example of food or other marketed product based on this idea?
- ▶ Can you use tea bags/ tissue paper/ pasta/ any one product to demonstrate how diffusion varies with temperature, medium, size, shape.....