

Student Worksheet

How Catalysts Work—a Nanoscale Phenomenon

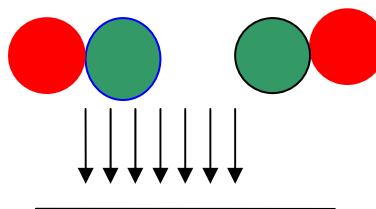
Purpose This demonstration and review is designed to help you understand how catalysts work on the nanoscale.

Materials

- a bottle of vanilla extract (or another extract)
- a snapper hand

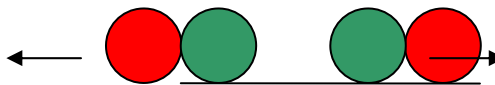
Adsorption

particles move toward the catalyst and adhere to the surface



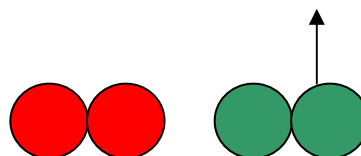
Diffusion

particles disassociate and move away from each other



Desorption

a particle the surface is released



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1. Suppose you break open a rotten egg and the odor overtakes the room. What process is this? _____

2. The odor in the egg is caused by H₂S gas. Explain, in terms of gas concentration, why the odor permeates the entire room.

3. Define catalyst. _____

4. Where does *diffusion* occur? _____

5. How does the diffusion process that occurs on the catalyst's surface change the reaction rate? _____

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6. If you throw mud at a wall, some mud sticks to the wall and some bounces off. The mud that sticks *adsorbs* to the wall. How does the adsorption process increase the chemical reaction rate with the use of a catalyst?

7. The chemical reaction will only occur if the conditions are right and the reactants come in contact with each other. How does the catalyst makes use of adsorption, diffusion, and desorption to increase the production rate of the reaction? Explain.
