Evaporation and Cooling

Why do you sweat?

How can you make a thermometer cool down below room temperature? (Try it out. What is the minimum temperature you can achieve?)

Now try a technique the teacher will show you using ethanol. Record the minimum temperature you can achieve using this technique.

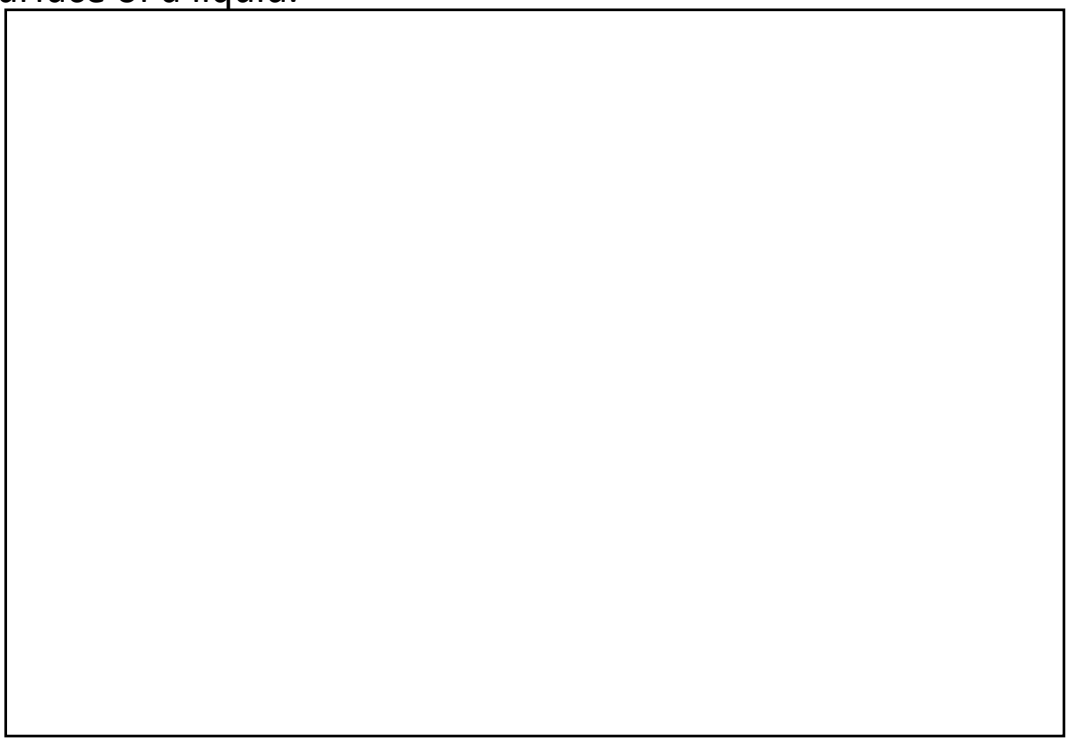
Why does a nurse wipe your skin with ethanol when they give you an injection?

Explaining the cooling effect of evaporation using particles

Do you think you can explain why evaporation causes cooling using particle theory? Here are some ideas to help you.

1) Evaporation involves a liquid changing into a gas (i.e. a change of state).
2) Changing from a liquid to a gas involved putting energy into the liquid.
3) Not all particles in the liquid move at the same speed. They have different kinetic energies.
4) Only the particles which are moving fastest (i.e. with the most kinetic energy) can overcome the forces of attraction between particles in the liquid and escape the liquid surface.
5) The temperature of a liquid is related to the mean kinetic energy of its particles.

Draw a particle diagram showing evaporation from the surface of a liquid.



What 3 factors affect the rate of evaporation from a liquid?

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