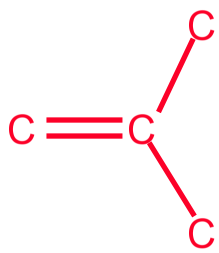
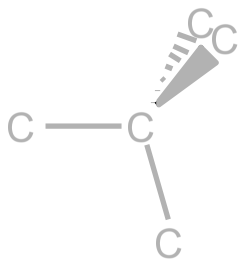
Graphite vs. Diamond

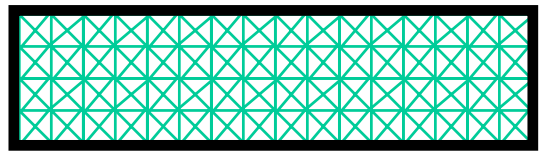
Layers slide past each other easily, conduct electricity.



vs.

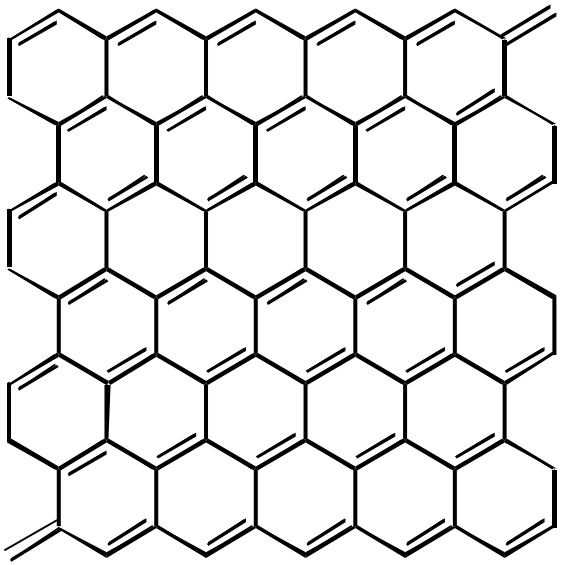


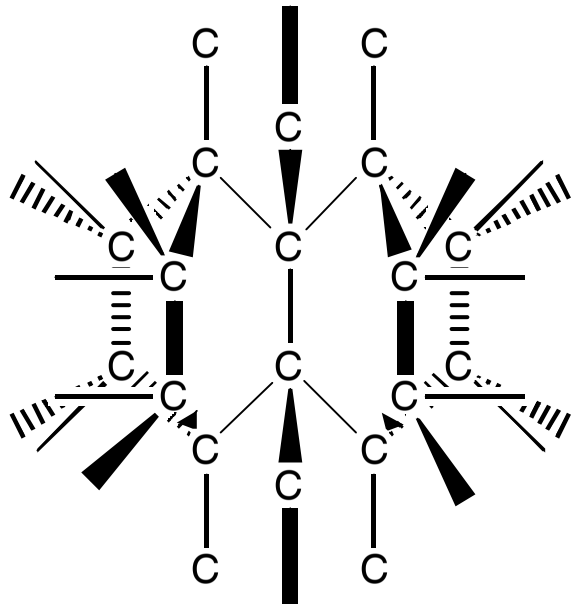
Extremely rigid, non-conductive



"Diamonds are forever."

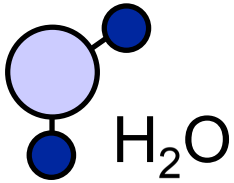
Don't you believe it! Diamonds at atmospheric presure slowly but inexorably convert into plain old graphite with the passage of time.





Graphite is more thermodynamically stable than diamond!

(Diamond only forms from raw carbon under high pressures)



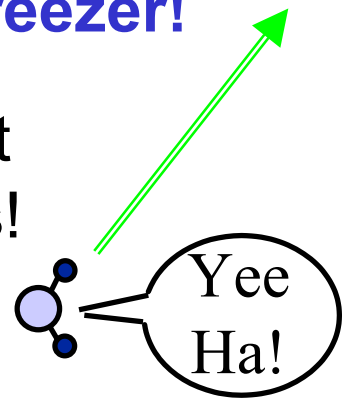
Why Ice Cubes Shrink in the Freezer

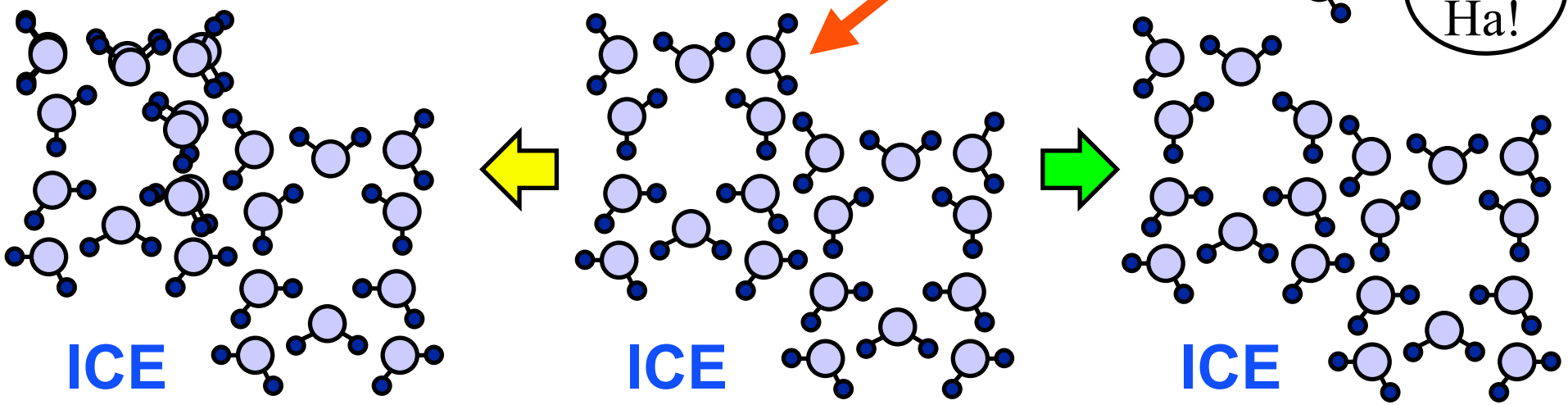
In solids with very low thermal conductivities and weak inter-particle bonds (molecular solids like H_2O and CO_2), collisions with fast-moving gas particles can send lone molecules hurtling into the gas phase, leaving the rest of the solid behind. **Such *sublimation* is why ice cubes shrink in your freezer!**

Usually, an excited molecule shares its extra energy:

A fast-moving gas molecule N_2

But not always!





Heating of Solid ⇐ **Excitation** ⇒ Sublimation