**Aerogels**

Many people were interested in aerogels, and doing demos with them. Here are some resources related to this topic:

* NISE has a cart demo related to aerogels: <http://www.nisenet.org/catalog/programs/aerogel>
* Teachersource.com sells aerogel discs: <http://www.teachersource.com/product/aerogel/density>
* NASA has a (fairly old) discussion about aerogels: <http://science.nasa.gov/science-news/science-at-nasa/1997/msad05mar97_1/>
* This website suggests different experiments you could do with aerogels: <http://www.wellsj.com/library/aerogel_introduction.shtml>

**Forms of carbon**

During the brown-bag we talked about the phases of water and some of the solid phases (allotropes) of carbon. I had a question about how the different forms of carbon are created. To understand the conditions under which materials form, scientists create phase diagrams. [This phase diagram for carbon](http://commons.wikimedia.org/wiki/File%3ACarbon_basic_phase_diagram.png) shows that diamond forms at high pressures, while graphite forms under low pressures.

To relate this to water, [this link](http://d32ogoqmya1dw8.cloudfront.net/images/research_education/equilibria/h2o_phase_diagram_-_color.v2.jpg) shows the phase diagram for water. However, it turns out that this is a simplified phase diagram. If we widen the pressure and temperature ranges, we’d see that the [full phase diagram](http://www1.lsbu.ac.uk/water/water_phase_diagram.html) of water is really complicated. In fact, water has multiple solid phases, just like carbon. The many phases of ice have different crystal structures (different bonding patterns) and different properties. So this might be a good analogy when talking about the different forms of carbon. You can check out [this link](http://www1.lsbu.ac.uk/water/ice_phases.html) to learn more about the phases of ice.