soaked paper spacer (the electrolyte can have many different compositions, but borax has been successfully used in the past).

In a "nano" world, increasing A is difficult without increasing the size of the capacitor whereas decreasing d can lead to small capacitors and this is in tune with our present "nano" world. However, we have to remember that $\varepsilon_0 = 8.85 \times 10^{-12}$ F/m (value given to students) and so even d = 1 nm and A = 1 m^2 (is this a reasonable value?) will leave C less than 1 F. At this stage the students were told that there were now commercial electrolytic supercapacitors (or ultracapacitors) available with capacitances on the order of a few farads or more. How did they think this was achieved (given what we have already discussed)? What was looked for here in the wrap-up was a suggestion that the area A needed to be increased. The existing supercapacitors make use of carbon materials with large effective areas due to their porosity; areas of as much as 250 m^2 are quoted. Small d's (yes, on the order of 1 nm) are achieved by producing electrical double layers. There will be much research done on these capacitors over the next few decades because of the large commercial interest in their applications.