(1) In a catalog we find listed a Mylar high-voltage capacitor, capacitance 0.3 μF, voltage rating 10 kV dc, the dimensions of which are given, in inches, as $3.25 \times 5.5 \times 2.25$. Estimate the height to which such a capacitor could be lifted, using all the electrical energy it can store.

The volume of the capacitor is approximately 40 cubic inches or 600 cm^3. Assuming its mean density is somewhat more than the density of water we'll estimate its mass as 0.8 kg. At 10 kV the energy stored in the capacitor, $CV^2/2$, is 25J, enough to lift the capacitor itself about 3 m.