Nanotech for waterproofing (teacher guide to exercises and experiments)

AIM

- For students to observe the ultra-water repellent surface of a dried lotus leaf, and understand that it is caused by the nano-structure of the leaf
- For students to appreciate that Chemists try to copy this nanotechnology to produce water-protective coatings for electronic devices and clothing

EXPERIMENT QUESTIONS— answer guide for teachers

1. The lotus leaf is ultra-hydrophobic, and water rolls straight off, without even wetting the surface. Paper is quite hydrophobic, and water droplets stay quite rounded on the paper. Aluminium foil attracts the water the most, and the water droplet spreads out to have as much contact as it can with the surface.

2. Scientists make nano-structured surfaces to repel water; the water-repellence is a combination of the hydrophobicity of the chemicals at the surface, as well as their topology.

3. The under surface of the lotus leaf does not have the nano-structure to it, and does not repel water in the same fashion: