

Editorial

K L Sebastian, Associate Editor

Scientists are expected to be very objective in their work. Reexamining one's own results and verifying them repeatedly are integral parts of their work. However, there have been cases of scientists, even reputed ones, falling into the trap of believing something that is patently false to be true and then trying to find evidence for the same. Many of these are perfectly honest scientists who have unknowingly become biased in the interpretation of their results. In 1953, Irving Langmuir, the American physical chemist, called this "pathological science" and gave a lecture with the same title which should be read by all working as well as aspiring scientists (see <http://www.cs.princeton.edu/~ken/Langmuir/langmuir.htm>).



Email: kls@ipc.iisc.ernet.in

Recent such examples are the polywater and cold fusion controversies. In the 1960s, Derjaugin, a reputed Soviet scientist claimed that water can be polymerized into polywater, a form of water with astonishing physical properties. It had a freezing point less than $-40\text{ }^{\circ}\text{C}$, and a boiling point greater than $150\text{ }^{\circ}\text{C}$. The report was 'confirmed' by a number of other scientists. However, there were sceptics too who eventually showed that polywater was just water which contained lots of dissolved impurities. In 1989, Fleishman and Pons claimed to have carried out fusion reaction between deuterium nuclei within a platinum electrode in an electrochemical cell under rather mild conditions. It gained immediate attention, as this could solve all the energy problems of the world. Even though the results were 'reproduced' by some other workers, eventually it was found that there was no evidence in support for cold fusion.

This issue of *Resonance* focuses on the life and work of Irving Langmuir, which is covered in the article by Anil Rajvanshi. Langmuir worked for the General Electric Company in the US and investigated the chemistry and physics of problems of industrial importance. He was the first chemist to be awarded the Nobel Prize in the area of surface science in 1932. There are quite a few things that his name is associated with – Langmuir adsorption isotherm, Langmuir–Blodgett films, Langmuir circulation, etc. The elegance with which Langmuir analyzed research problems is illustrated by a paper that he wrote in *Science* on the flight of the deer fly, which is reproduced in the 'Classics' section.

