

National Science Day

HBCSE-TIFR

February 28, 2022

HBCSE celebrated the National Science Day by inviting students from class IX across various schools in Mumbai. More than 400 students visited HBCSE on this occasion. Workshops, demonstrations, experimental sessions and book stalls were organized by various groups of HBCSE.

The following demonstrations were performed by members of chemistry group at HBCSE.

❖ *Understanding flame test in chemistry*

Various kind of colours often seen in the fire-crackers are a result of excitation of electrons in different salts and compounds. Flame test is performed by introducing a metal salt in the flame and observing colours imparted to the flame by the metal ion of the respective salt. Ice cream sticks were soaked in aqueous salt solutions of Cu, Na, Li, Sr, Ca and K and the colors imparted to the flame were shown to the students with a brief discussion on how fire crackers get their magnificent colours.



Reference: <https://edu.rsc.org/practical/identifying-ions-practical-videos-14-16-students/4011491.article>

❖ *The interesting process of metal coating*

Electroplating is a process in which metal ions migrate through a solution under influence of an electric current and form a coating on the material at the cathode. This activity modelled the electroplating process by coating copper over different iron articles. A solution of copper sulphate (10 g CuSO_4 in 500 ml H_2O), 9V battery, copper strips, copper wires and iron articles such as iron nails, coins etc. were used in the demonstration. The iron articles to be coated were used as cathodes and graphite and aluminium rods were used as anodes. An electrical current was passed through CuSO_4 solution (electrolyte) using the battery.



Reference: <https://www.youtube.com/watch?v=FnJ0V7B7nKo>

❖ *Removing tarnish in copper items: Can household items help?*

This activity is a part of the Vigyan Pratibha project of HBCSE-TIFR, which is initiative of Government of India for extended nurture of talent in Science and Mathematics among school students from classes VIII-X in the country.

<https://vigyanpratibha.in/>

Copper being a reactive metal reacts slowly in presence of oxygen and other components of air, resulting in black/brown layer of copper oxide. Such blackened copper articles if not cleaned further tarnish to form bluish green coat of basic copper salt. Many household substances can be used to remove this tarnishing. This activity demonstrated how the original reddish lustre of copper articles can be regained. Effects of substances like lemon juice, tamarind juice, curd, vinegar, baking soda, table salt, and dish wash bar were shown to the students. At the end students were able to relate the acidic nature of substances to their effectiveness in cleaning the copper utensils and identify which household substances can be used to remove copper tarnishing effectively.



Reference: <https://vigyanpratibha.in/index.php/bringing-back-shine-to-copper/>