

Gold to help fight textile dye pollution

By Bhavya Khullar

New Delhi, April 18 (India Science Wire): Multi-coloured textiles are often popular with consumers, but manufacturing them involves use of highly toxic dyes. This results in harmful water pollution. Now Indian scientists have found a way to handle this problem using a surprise material – gold.

Researchers at the University of Delhi have developed a catalyst that could help mitigate the problem of water pollution due to textile dyes. The catalyst has been made by linking gold nanoparticles to a chemical substance called poly dimethylaminoethyl methacrylate (PDMAEMA).

Because of this material, gold nanoparticles align to form a worm-like structure. Therefore, scientists have nicknamed it as gold nanoworm. “PDMAEMA plays a very important role by capping gold nanoparticles for growth of nanoparticle into a worm like structure”, researchers have said in their study published in scientific journal *Applied Surface Science*. The gold nanoworm is immobilized on a sheet of graphene oxide for structural support.

The material made of gold nanoworms could effectively degrade chemical dyes like Rhodamine B, EosinY, and methyl orange into harmless products. These dyes are difficult to degrade owing to their ultra stable chemical structure.

India ranks second in the global textile manufacturing after China. The textile industries use dyes to impart colors to textiles. The unused dyes are discarded via drains that ultimately pollute groundwater and water bodies. This called for catalysts that can efficiently degrade organic dyes. It is preferred if they are reusable and environment-friendly.

The new material made of gold nanoworms can be reused at least five times. “It is easy to use, highly efficient, recyclable, which make it suitable for applications in waste water management”, scientists say. The research group include Navin Kumar Mogha, Saransh Gosain, and Dhanraj T Masram at the University of Delhi.

This catalyst could degrade more than 80% of the dyes in water in less than 100 seconds, which makes it suitable to treat dye-polluted water in the future. (India Science Wire)