Nanostrings Of Palladium And Gold

Researchers link metal nanorods of different types and sizes end-to-end, giving the chains tunable optical properties

By Lauren K. Wolf

Just as scientists form polymer chains by linking molecules together, they can form so-called nanochains by stringing together various nanosized particles. Researchers think strings of metallic nanoparticles in particular might become future components on computer chips or tiny antennae that convert light into energy. A research team led by Eugenia Kumacheva of the University of Toronto has developed a way of controllably linking metal nanorods of different types and sizes end-to-end (Angew. Chem. Int. Ed. 2014, DOI: 10.1002/anie.201309718).

In the past, Kumacheva’s group assembled chains of identical gold nanorods. In the new work, however, the team builds nanochains made of palladium and gold rods. Kumacheva says these mixed-metal chains have more interesting optical properties than the gold-only versions. The researchers also built “block copolymers” composed of tracts of long and short gold nanorods. To make these nanochains, the team attaches polystyrene strands to the ends of the rods. Then the researchers add a polar solvent to various mixtures of palladium and gold rods, causing the polystyrene strands to associate and force the rods to line up and stick together tightly.

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