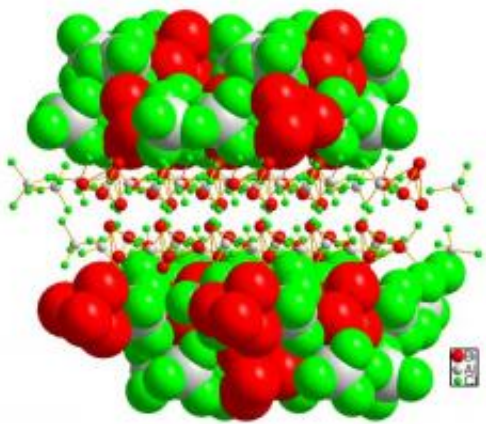


Advances in the controlled synthesis and applications of luminescent metal nanoclusters

March 7 2014

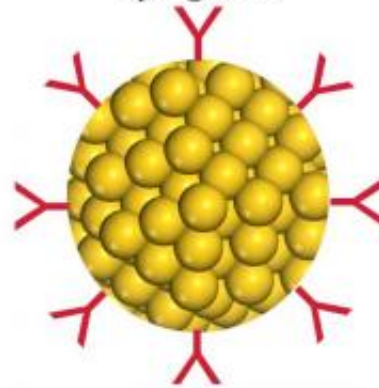
Luminescent nanoclusters

nanoclusters in crystals

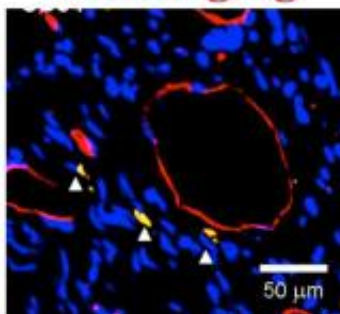


disperse nanoclusters protected

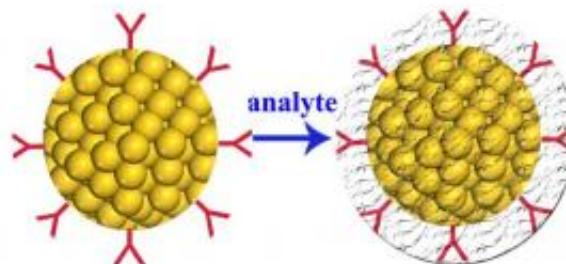
by ligands



Bioimaging



Sensors



Luminescent metal nanoclusters are a new class of materials consisting of several, to tens of, metal atoms. These materials not only provide the missing link between atomic and nanoparticle behaviors in metals, but also present abundant information for the development of new material systems to meet urgent needs in optical imaging and related areas.

Gold (Au) and silver (Ag) [nanoclusters](#) (NCs) have been extensively studied over the past decade. In sharp contrast, other types of nanoclusters – composed of platinum (Pt) or non-noble metals – received much less attention, although they demonstrate comparable or superior luminescent properties.

In this paper, published in *Science and Technology of Advanced Materials*, Hong-Tao Sun and Yoshio Sakka focus on luminescent NCs composed of Pt, molybdenum (Mo), bismuth (Bi) or more than one metal element, and compare their respective advantages and disadvantages. They also speculate on future research and discuss potential developments for their use in sensors, bioimaging, and energy harvesting and conversion.

Given the low-cost, excellent chemical stability, colloidal stability and photostability of the nanoclusters described in this paper, they may find a broad range of applications in [optical imaging](#) and related disciplines.

More information: "Luminescent metal nanoclusters: controlled synthesis and functional applications," Hong-Tao Sun and Yoshio Sakka: *Sci. Technol. Adv. Mater.* Vol. 15 (2014) p. 014205.

dx.doi.org/10.1088/1468-6996/15/1/014205

Provided by National Institute for Materials Science

Citation: Advances in the controlled synthesis and applications of luminescent metal nanoclusters (2014, March 7) retrieved 25 April 2024 from <https://phys.org/news/2014-03-advances-synthesis-applications-luminescent-metal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.