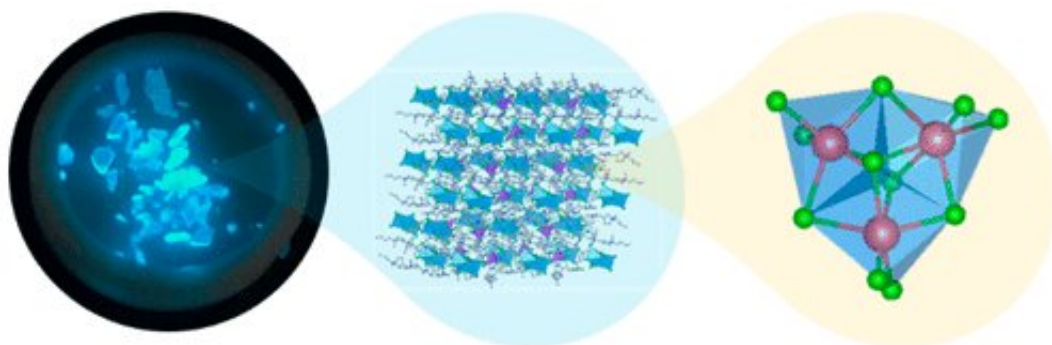


Blue light special—researcher finds new chemical clusters emit highly efficient light

October 1 2018



Credit: Wiley

A Florida State University research team has discovered that a unique organic-inorganic compound containing zero-dimensional molecular clusters emits a highly efficient blue light.

The new discovery is reported in the *Journal of the American Chemical Society*.

Associate Professor of Chemistry and Biochemistry Biwu Ma has been working with an emerging class of functional [materials](#) that are organic-inorganic [metal](#) halide hybrids. A typical metal halide hybrid contains metal and halogen, and another component that can be either organic or inorganic.

Ma describes these metal halide hybrids as materials built from Lego-like pieces because they can be assembled by using the same chemical building blocks—metal halide octahedrons.

"Basically, all these materials have the same building blocks." Ma said. "What we have been working on is to find the chemistry to put these Lego pieces together to form different configurations and then explore their distinct properties—such as luminescence—that accompany these configurations."

Previously, Ma's group has reported metal halide layers, wires and tubes using these [building](#) blocks.

The newly developed single crystalline assembly of metal halide clusters has a highly efficient blue emission—the essential color for solid state lighting and full color display applications.

It has more than 80 percent efficiency, meaning it could potentially be developed for use in photon-related technologies like lasers or light-emitting diodes. "It has fantastic photophysical properties," Ma said. "This quantum efficiency is actually among the highest values reported to date for single crystalline blue light emitters."

More information: Chenkun Zhou et al, Blue Emitting Single Crystalline Assembly of Metal Halide Clusters, *Journal of the American Chemical Society* (2018). [DOI: 10.1021/jacs.8b07731](https://doi.org/10.1021/jacs.8b07731)

Provided by Florida State University

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