NEWS RELEASE 30-JAN-2024

Small yet mighty: showcasing precision nanocluster formation with molecular traps

Researchers demonstrate the growth of cobalt nanoclusters on two-dimensional copper surfaces using an array of ring-shaped crown ether molecules

Peer-Reviewed Publication

CHIBA UNIVERSITY

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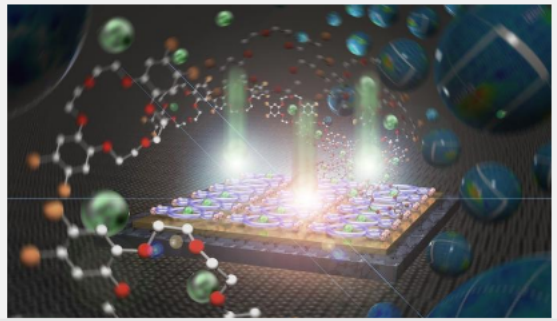
Nanoclusters (NCs) are crystalline materials that typically exist on the nanometer (10-9 m) scale. They are composed of atoms or molecules in combination with metals like cobalt, nickel, iron, and platinum, and have found several interesting applications across diverse fields, including drug delivery, catalysis, and water purification. A reduction in the size of NCs can unlock



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Small Yet Mighty: Showcasing Precision Nanocluster Formation with Molecular Traps

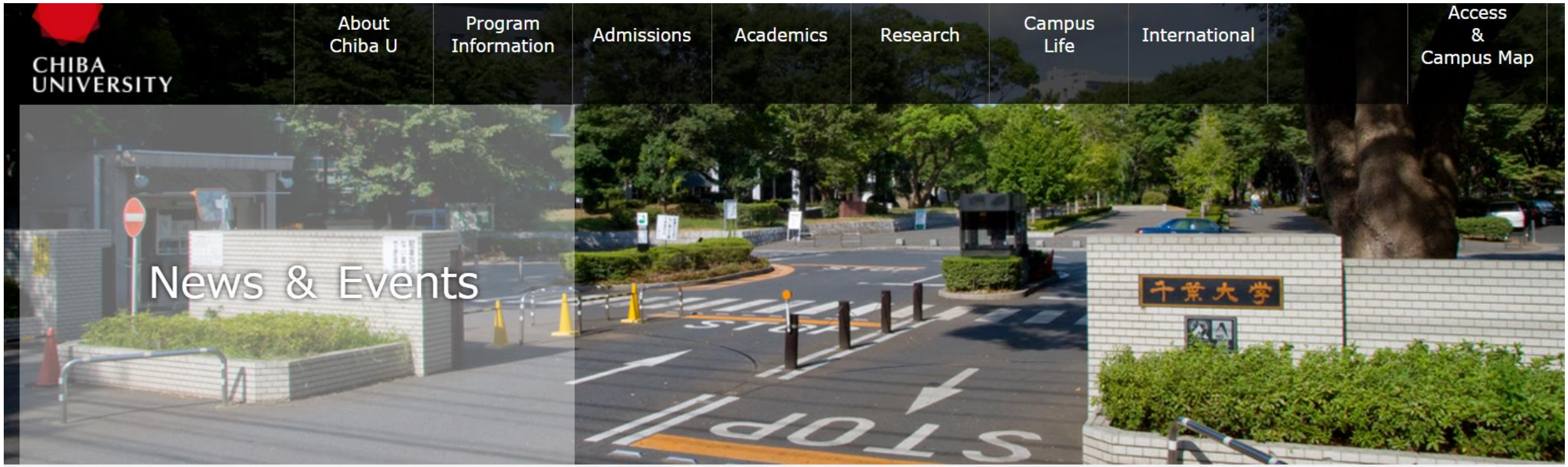
2024.01.30

Faculty of Engineering, Chiba University

Toyokazu YAMADA »

Associate Professor

I am conducting research on the functionality of a single magnetic atom or molecule on the surface of solid materials, such as magnetic substances and superconductors, as a quantum bit or quantum sensor for the next generation of quantum computers. Additionally, I have developed a distinctive scanning tunneling microscope capable of directly observing the quantum states of the smallest atomic and molecular structures. My current focus is on actively contributing to the development of novel quantum materials.



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2024.01.30

Nanoclusters (NCs) of transition metals like cobalt or nickel have widespread applications in drug delivery and water purification, with smaller NCs exhibiting improved functionalities. Downsizing NCs is, however, usually challenging. Now, scientists from Chiba University in Japan have demonstrated functional NC formation with atomic-scale precision. They successfully grew cobalt NCs on flat copper surfaces using molecular arrays as traps. This breakthrough paves the way for advancements like single-atom catalysis and spintronics

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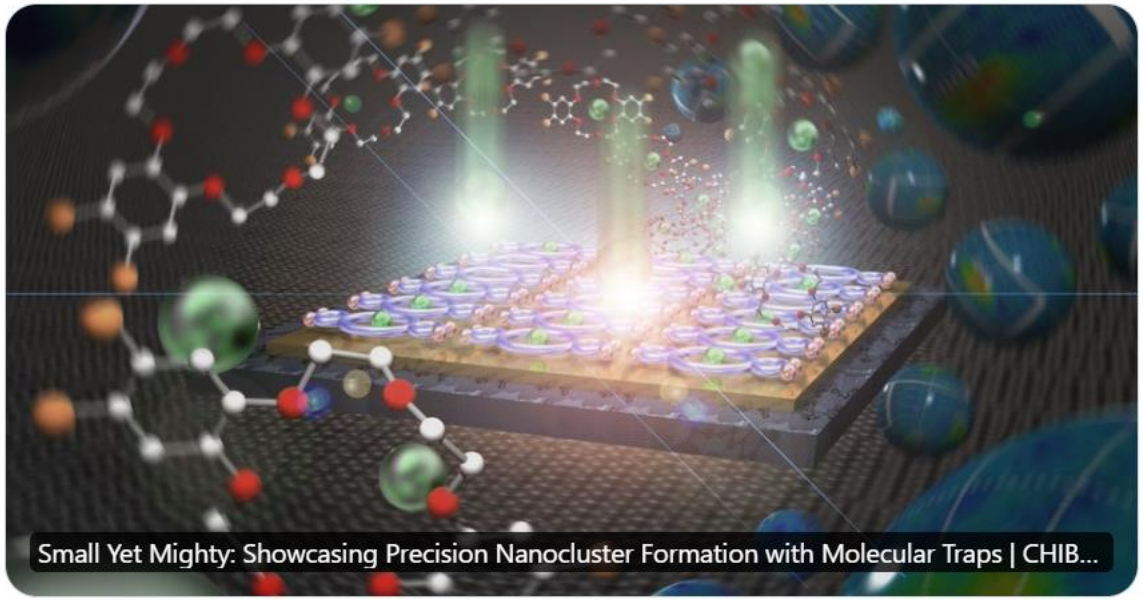

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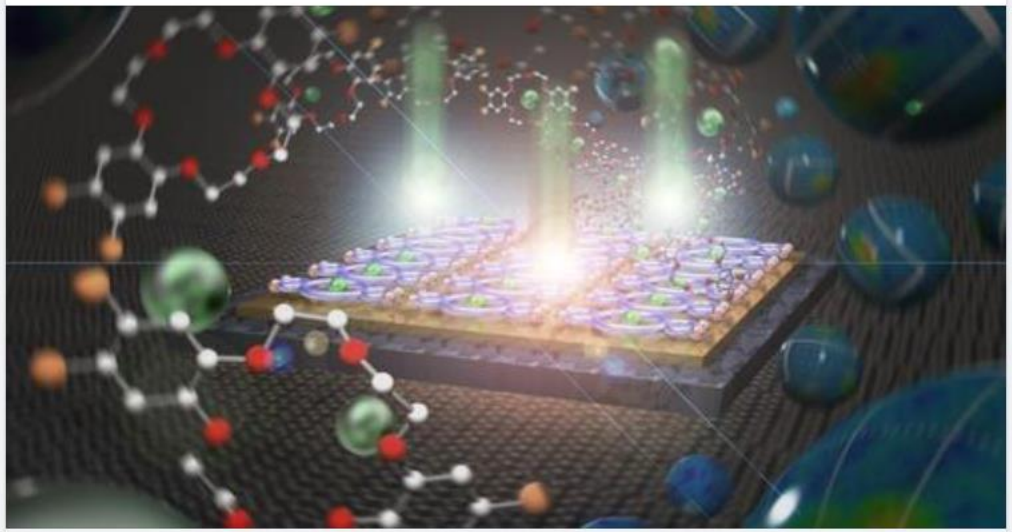

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