



## Latest News

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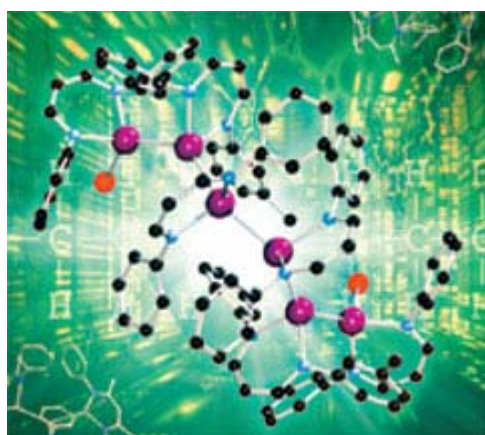
## Inorganic Chemistry

# A Chain Of Six Indium Atoms

## Group 13 element shows surprising ability to form a linear oligomer

[Mitch Jacoby](#)

A compound composed of six indium atoms arranged in a linear chain has been synthesized by researchers in England (*Science* **2006**, 311, 1904). The study broadens understanding of main-group metal chemistry and may lead to novel strategies for preparing inorganic oligomers and polymers.



Courtesy of Michael Hill

## Six Little Indiums

**Bonding bulky  $\beta$ -diketiminato ligands to**

**indium directs the metal atoms to form a six-membered linear chain. In is purple; I, red; C, black; and N, blue.**

Unlike carbon and other group 14 elements, which readily form molecular chains of various lengths, elements in group 13 (B, Al, Ga, In, and Tl) are far less likely to bond to one another in a linear fashion, particularly in chains of three or more atoms. But now researchers have shown that under the right circumstances, indium can form linear oligomers.

By reacting indium iodide with a protonated *N*-xylyl  $\beta$ -diketiminate and a strong potassium base, the scientists formed a hexaindium chain in which one  $\beta$ -diketiminate ligand is bound to each metal atom. On the basis of crystallography studies, the team reports that both ends of the chain are capped with iodine and that there are no bridging ligands supporting the five indium-indium single bonds.

The research team includes [Michael S. Hill](#) and Ruti Pongtavornpinyo of Imperial College London and [Peter B. Hitchcock](#) at the University of Sussex.

"We certainly weren't expecting the open-chain complex to form in the way it did," says Hill, who led the study. He adds that, considering earlier work that he and his colleagues conducted on indium compounds and isoelectronic polystannanes, "I was hoping for a well-defined cyclic oligomer." Just the same, Hill points out that the surprising results are "completely reproducible."

He hopes that the paper "will add another color to the palette of chemistry and prompt researchers to examine the potential of inorganic polymers more broadly."

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