A hexabenzocoronene molecule (diameter: 1.4 nanometers) imaged by noncontact atomic force microscopy using a microscope tip terminated with a single carbon monoxide molecule. The carbon-carbon bonds in the imaged molecule appear with different contrast and apparent lengths. Based on these disparities, the bond orders and lengths of the individual bonds can be distinguished. See page 1326.

Image: Leo Gross, IBM Research - Zurich
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1313 Adaptive Prolonged Postreproductive Life Span in Killer Whales
E. A. Foster et al.
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W. Liu et al.
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1326 Bond-Order Discrimination by Atomic Force Microscopy
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1330 Glacier Extent During the Younger Dryas and 8.2-ka Event on Baffin Island, Arctic Canada
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10.1126/science.1224159

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10.1126/science.1228309

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PERSPECTIVE: Revisiting the Nucleolus—From Marker to Dynamic Integrator of Cancer Signaling
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http://scim.ag/VideoBench

SCIENTIFIC TRANSFORMATIVE MEDICINE
www.sciencetranslationalmedicine.org
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12 September issue: http://scim.ag/stm091212

RESEARCH ARTICLE: Sinus Microbiome Diversity Depletion and Corynebacterium tuberculosis Enrichment Mediates Rhinosinusitis
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COMMENTARY: Stem Cells, Dot-Com
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