BAY AREA & JAPAN RELATED NEWS

Osaka University

A Novel Bottom-up Nanostructuring System at Room Temperature Based on Atomic Force Microscopy (AFM)

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We have been developing a novel bottom-up nanostructuring system at room temperature (RT) based on atomic force microscopy (AFM). Very recently, we have succeeded in development of a novel chemical identification method at RT [1] based on site-specific force spectroscopy that is independent of tip, topography and chemical coordination, but dependent on atom species, with atomic resolution. As a result, we accomplished atom-by-atom identification of silicon (red), tin (blue) and lead (green) atoms as shown in Figure 1. Besides, we also succeeded in development of a novel atom manipulation/assembly method at RT [2]. It enables us to manipulate embedded atom species and to assemble compound nanostructures consisted of more than two atom species such as "Sn" (Figure 2), which is embedded atom letters (atom inlay).

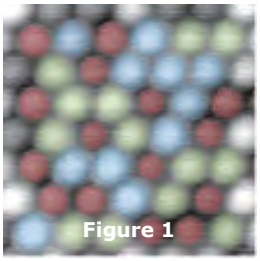
Figure 1

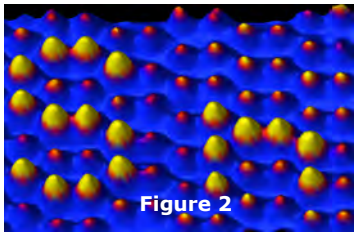
Figure 2

[1] Y.Sugimoto et al.; "Chemical identification of individual surface atoms by atomic force microscopy", Nature, **446**, Issue **7131** (2007) pp.64 – 67, ibid. Cover Story, ibid. News & Views "Atomic fingerprinting" pp.34-35, Nature Nanotechnology **2** (2007) p.139
[2] Y.Sugimoto et al.; "Atom inlays performed at room temperature using atomic force microscopy", Nature Materials, **4** (2005) pp.156–159

IAP08

5TH INTERNATIONAL CONFERENCE INTERFACES AGAINST POLLUTION 2008

June 1-4 Kyoto, Japan

Venue Clock Tower Centennial Hall, Kyoto University.

Preface
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- Katsumi Kaneko, Chiba University, Japan
- Masao Doi, University of Tokyo, Japan

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