

3D SiC 'Nanoflowers' - Most Beautiful Science Images of the Year

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Most beautiful science images of the year released

Today the Institute of Physics releases some of the most beautiful science images of the year so far, a collection of photomicrographs of tiny "flowers" and "trees" less than one thousandth the width of a human hair. The images are published in the Institute journal Nanotechnology.

These stunning images were taken by Ghim Wei Ho, a PhD student studying nanotechnology at Cambridge University. She has named some of her best photographs nanobouquet, nanotrees, and nanoflower because of their curious similarity to familiar organic structures such as flower-heads and tiny growing trees.

Ghim Wei's work involves making new types of materials based on nanotechnology and these flowers are an example of such a new material. Here, nanometre scale wires (about one thousandth the diameter of a human hair) of a silicon-carbon material (silicon carbide) are grown from tiny droplets of a liquid metal (Gallium) on a silicon surface, like the chips inside our home computers.

The wires grow as a gas containing methane flows over the surface. The gas reacts at the surface of the droplets and condenses to form the wires. By changing the temperature and pressure of the growth process the wires can be controllably fused together in a natural process to form a range of new structures including these flower-like materials.

Professor Mark Welland, head of Cambridge's Nanoscale Science Laboratory and Ghim Wei's supervisor, said:

"The unique structures shown in these images will have a range of exciting applications. Two that are currently being explored are their use as water repellent coatings and as a base for a new type of solar cell. We have already shown that as a coating water droplets roll off these surfaces when they are tilted at angles as small as 5 degrees. This behavior is a direct consequence of the ability of such nanostructured surfaces to strongly repel water".

Dr Paul Danielsen, director of communications at the Institute of Physics, said:

"Science can be beautiful. These images show cutting edge nanotechnology research but are strikingly images in their own right. Maybe science and art aren't so different after all."

The original release can be found on www.iop.org/

The paper 'Three-dimensional crystalline SiC nanowire flowers' by Ghim Wei Ho, Andrew See Weng Wong, Dae-Joon Kang and Mark E Welland appears in the latest issue of the journal Nanotechnology. It can be viewed free of charge for 30 days here:

stacks.iop.org/0957-4484/15/996

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