

控制表面氧化法制备超疏水 CuO纳米花膜

钱柏太, 沈自求

大连理工大学化工学院, 大连 116012

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**摘要** 采用含有过硫酸钾氧化剂和氢氧化钾的水溶液处理金属铜表面, 再经空气中加热后, 在铜表面上得到了一层具有花朵状纳米结构的CuO膜. 每朵纳米花由数十个长约2 $\mu\text{m}$ 、宽约120nm、厚约12nm的CuO纳米片自组装而成. 纳米花膜经氟化处理表现出超疏水性, 接触角达到约158 $^\circ$ .

文中初步提出了纳米花形态的生长机制, 并用Cassie理论对膜的润湿性进行了分析.

**关键词** [超疏水](#) [氧化铜](#) [纳米花](#) [润湿性](#)

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## Super-hydrophobic CuO Nanoflowers by Controlled Surface Oxidation on Copper

QIAN Bai-Tai, SHEN Zi-Qiu

School of Chemical Engineering, Dalian University of Technology, Dalian 116012, China

**Abstract** A CuO nanoflower film was fabricated on copper by controlled surface oxidation in KOH aqueous solutions with an oxidant  $\text{K}_2\text{S}_2\text{O}_8$  and subsequent heat treatment in air.

Results show that the nanoflower is formed by self-assembly of tens of CuO nanosheets. The nanosheet is about 2 $\mu\text{m}$  in length, 120nm in width, and 12nm in thickness. After fluorination treating, the nanoflower film exhibits super-hydrophobic properties, with a water contact angle of about 158 $^\circ$ . The possible mechanism was proposed on the growth of the CuO nanoflowers. Also, the wettability of the CuO films was discussed on the basis of Cassie theories.

**Key words** [super-hydrophobic](#) [CuO](#) [nanoflowers](#) [wettability](#)

DOI:

通讯作者 沈自求 [ziqu\\_shen@yahoo.com.cn](mailto:ziqu_shen@yahoo.com.cn)

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