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氢氟酸加入量对钛基半导体结构演变及光催化性能的影响

张 昊 李新刚* 蔡金孟 王亚婷 武墨青 丁 彤*
孟 明 田 野

(天津大学化工学院，天津化学化工协同创新中心，天津市应用催化科学与工程重点实验室，天津 300072)

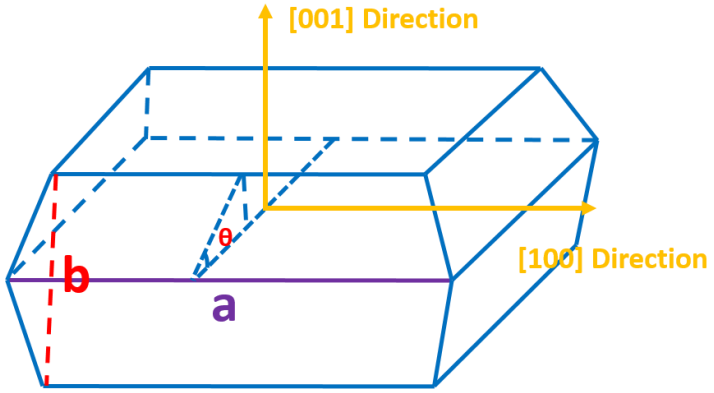
Effect of the Amount of Hydrofluoric Acid on the Structural Evolution and Photocatalytic Performance of Titanium Based Semiconductors

ZHANG Hao LI Xin-Gang* CAI Jin-Meng WANG Ya-Ting WU Mo-Qing
DING Tong* MENG Ming TIAN Ye

(*School of Chemical Engineering & Technology, Tianjin University, Collaborative Innovation Center for Chemical Science & Engineering (Tianjin), Tianjin Key Laboratory of Applied Catalysis Science & Engineering, Tianjin 30072, P. R. China*)

*Corresponding author. Email: xingang_li@tju.edu.cn; Tel: +86-22-27400950.

1. TiO_2 {001}面暴露比的计算



暴露{001}面的 TiO_2 单晶几何结构示意图如上图所示，其中 θ 为 68.3°，根据 TEM 统计结果得到 a 与 b，根据下式计算{001}面暴露比 $S_{001\%}$。

$$S_{001\%} = \frac{S_{001}}{S_{001} + S_{101}} \times 100\% = \frac{\cos\theta}{\cos\theta + \left(\frac{a - \frac{b}{\tan\theta}}{a}\right)^{-2} - 1} \times 100\%$$

根据 TEM 计算时，a 与 b 为对 TEM 图片统计所得数值，统计分析时选取样本数量大于 100 个。

2. 图片

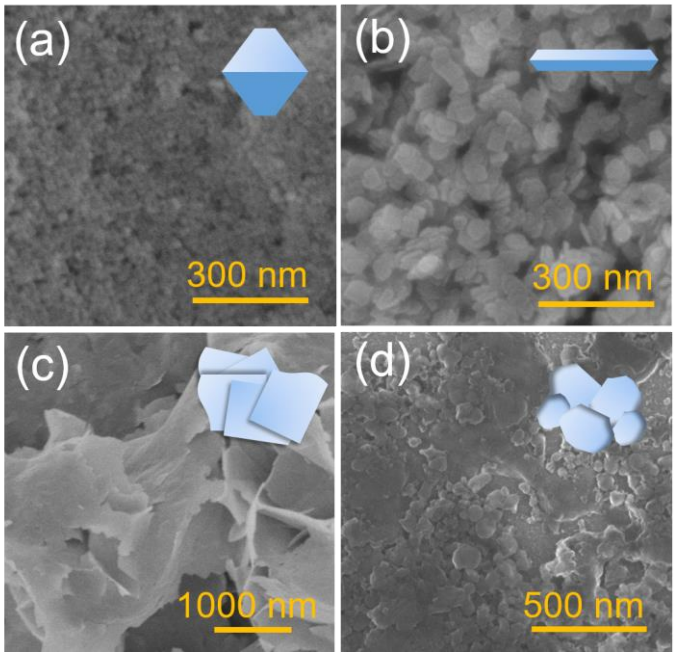


图 S1　样品的 SEM 图: (a) THF0, (b) THF3.5, (c) THF7, (d) THF10，内嵌图为各样品的形貌示意图

Fig.S1　SEM images of the as-prepared samples: (a) THF0, (b) THF3.5, (c) THF7, (d) THF10, insets show the sketch maps of the as-prepared samples.

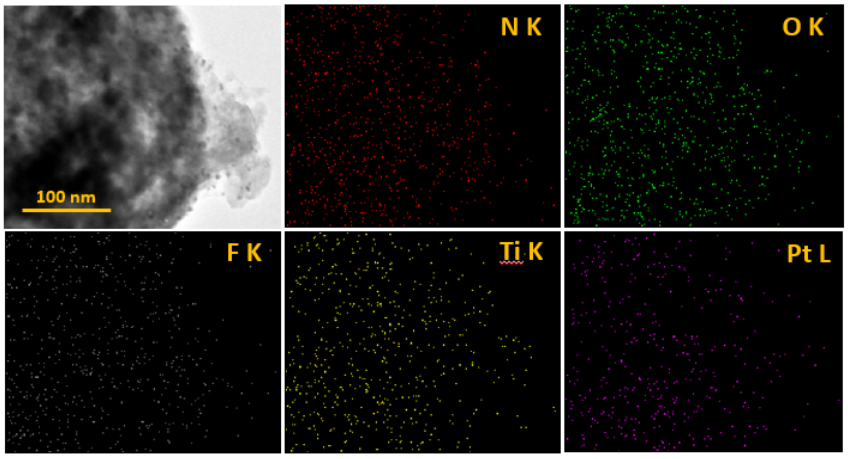


图 S2　样品 THF10 的 STEM-EDS Mapping 分析结果

Fig.S2　STEM-EDS Mapping results of the sample of THF10.

3. 表格

表 S1　样品的比表面积

Table S1　Specific surface area of as-prepared samples.

Samples	THF0	THF3.5	THF7	THF10
Surface Area ($m^2 \cdot g^{-1}$)	134.5	123.0	33.6	24.5