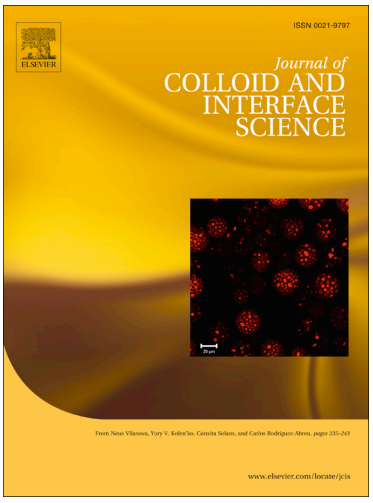

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PII: S0021-9797(18)30820-8
DOI: https://doi.org/10.1016/j.jcis.2018.07.064
Reference: YJCIS 23855

To appear in: *Journal of Colloid and Interface Science*

Received Date: 4 May 2018
Revised Date: 13 July 2018
Accepted Date: 17 July 2018

Please cite this article as: D. Han, Y. Ji, F. Gu, Z. Wang, Cobalt oxide nanorods with special pore structure for enhanced ethanol sensing performance, *Journal of Colloid and Interface Science* (2018), doi: https://doi.org/10.1016/j.jcis.2018.07.064

Cobalt oxide nanorods with special pore structure for enhanced ethanol sensing performance

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Abstract: Cobalt oxide (Co_3O_4) nanorods with special pore structure were successfully synthesized by a facile hydrothermal method with proper temperature calcination. The relationship between morphologies, structures and gas sensing properties under different calcination temperature were investigated by using XRD, SEM, TEM and XPS method. The Co_3O_4 sample calcinated at 300 ^oC displayed the highest response of 143 and fast response/ recovery time to 100 ppm ethanol at relatively low operating temperature of 185^oC. The mechanism for enhanced gas sensing performances of Co_3O_4 nanorods to ethanol could be attributed to the large specific surface area and abundant pore structure through the unique Co_3O_4 nanorods. The particular surface components under the proper calcination temperature are also the possible reasons for such excellent sensing performances.

Keywords: Co_3O_4 nanorods; pore structure; calcination temperature; ethanol sensing performance.