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Cover story

(Xin-Jia Miao, Xiao-Jun Zhao, Hao Qin, Qi Jin, Yang Chen, Zong-Qiang Cao, Wei-Ting Yang, Qing-Ji Wang, Qin-He Pan, pp. 3662–3670)

Synergistic effect of cubic C_3N_4/ZnO/C hybrid composite for selective detection of sulfur dioxide

With the progress of human society and the development of industry, much attention has been focused on the detection of harmful gases in indoor and outdoor environments. SO_2, which is a colorless and highly toxic gas, is harmful to the environment and human health. It is necessary to develop gas sensing materials with good selectivity and durability to SO_2. A C_3N_4/ZnO/C hybrid, MFM@IRMOF-3-T, was prepared successfully for SO_2 monitoring by annealing the composite of melamine formaldehyde resin microsphere (MFM) and IRMOF-3. Its excellent sensing response, selectivity and repeatability can be attributed to the formation of C_3N_4 during the annealing process, which improves the electrical conductivity of the annealed product, and the bonding of nitrogen in MFM and zinc in IRMOF-3, which promotes electron transfer in MFM@IRMOF-3-T. The study of the C_3N_4/ZnO/C hybrid provides an effective strategy for the preparation of SO_2 sensor derived from MOF-based composite.

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