STRUCTURE AND MASS SPECTROMETRY STUFY OF NANOMETER S_n-α-$F_{e2}O_3$ CARBON MONOXIDE SENSOR MATERIALS

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Abstract

The Sn-α-Fe_2O_3 is one kinds of gas sensor materials, which is evolved from α-Fe_2O_3. In this paper, Sn-α-Fe_2O_3 was fabricated by liquid phase coprecipitation, and the carrier concentration was adjusted by the n-type Sn dopant. The particle morphology was examined by TEM, the lattice parameter was determined by XRD, and the surface area to mass ratio S_0 was determined by BET. The mass spectrum was used to determinate absorption properties and the absorption mechanism. It was found that the Sn-α-Fe_2O_3 particle was taken the shape of needle, and the long axis was about 120 nm and the short axis was 30nm. The resistivity could be improved by Sn dopant. The S_0 was proportional to the Sn dopant content of the Sn-α-Fe_2O_3. Mass spectrometry results showed that the change of the resistivity was due to the change of the carrier concentration.

Keywords Nanometer materials; α-Fe_2O_3; Sn—α-Fe_2O_3; CO; Gas sensor