

Development of New Oxygen Sensor by Microfabrication of Single-Crystal CuFeTe₂ Thin Films

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A new oxygen sensor based on resistance change caused by oxygen intercalation for the layered compound CuFeTe₂ (CFT) was developed. A microfabrication process for forming many fine pores on the surface of single-crystal CFT thin films by performing wet etching using photolithography was developed with the aim of reducing the response time of the oxygen sensor. A reproducible response of the fabricated samples to oxygen gas was confirmed when 20% oxygen gas and nitrogen gas were alternately introduced into the sample chamber. The microfabricated sample of the single-crystal CFT thin films showed a response time of 2.5 min to 20% oxygen gas, approximately 34% of that of the single-crystal CFT thin films without fine pores.

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