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RESEARCH NOTES

钛和沥青机械合金化合成纳米级碳化钛

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摘要 TiC powder was synthesized by mechanical alloying of titanium and asphalt in this paper. Deoiled asphalt as a carbon source not only provided element C in the fabrication of TiC but also cracked itself by the mechanical alloying process. The results of X-ray diffraction demonstrated the synthesis of cubic TiC. Gas phase chromatography showed that the discharged gas was composed of low molecular weight hydrocarbons, including H2, CH4 and C2H6. The formation mechanism of titanium carbide by mechanical alloying, and the thermodynamic and kinetics were discussed. These results showed that mechanical alloying is a promising method to prepare TiC and to crack asphalt with some light fraction byproducts.

关键词 asphalt, titanium carbide, mechanical alloying

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Synthesis of TiC powder by mechanical alloying of titanium and asphalt

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Abstract TiC powder was synthesized by mechanical alloying of titanium and asphalt in this paper. Deoiled asphalt as a carbon source not only provided element C in the fabrication of TiC but also cracked itself by the mechanical alloying process. The results of X-ray diffraction demonstrated the synthesis of cubic TiC. Gas phase chromatography showed that the discharged gas was composed of low molecular weight hydrocarbons, including H2, CH4 and C2H6. The formation mechanism of titanium carbide by mechanical alloying, and the thermodynamic and kinetics were discussed. These results showed that mechanical alloying is a promising method to prepare TiC and to crack asphalt with some light fraction byproducts.

Key words asphalt; titanium carbide; mechanical alloying

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