surface active substances in mechanical alloying[J]. Materials Science & Engineering A, 1991, A134:1346－1349.
[14] Sohoni S, Sridhar R, Mandal G. The effect of grinding aids on the fine grinding of limestone, quartz and Portland cement clinker[J]. Powder Technology, 1991, 67:277－286.
[15] Velamakanni Bhaskar, Fuersterau D W. The effect of the absorption of polymeric additives on the wet grinding of minerals 2: Dispersion and fine grinding of concentrated suspensions[J]. Powder Technology, 1993, 75:11.
[16] Suzuki, Kazuo, Kuwahara, *et al*. Effects of fluids on vibration ball mill grinding [J]. Journal of Chemical Engineering of Japan, 1986, 19(3):191－195.

Optimization of technologies of high energy ball milling on nanostructured WC－Co composite

ZHANG Feng-lin[1,2], ZHU Min[1]
(1. *Faculty of Mechanical Engineering, South China University of Technology, Guangzhou*, 510640; 2. *Faculty of Mechanical and electronic Engineering, Guangdong University of Technology, Guangzhou*, 510090)

Abstract: In this paper, an orthogonal experiment is introduced to optimize the technological parameters of high energy ball milling on nanostructured WC－Co composite. It is of benefit to fineing of WC-Co composite that the ratio of ball to powder is 15:1, the ball diameter is 8 mm and 12 mm, absolute alcohol with low surface tension is used as grinding medium and its amount is 12 ml, and the milling speed is 250 r/min.

Key words: ball milling; nano-structure material; WC－Co composite powder; orthogonal test