- 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.

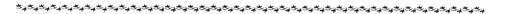
## Optimization of technologies of high energy ball milling on nanostructured WC – Co composite

ZHANG Feng-lin1,2, ZHU Min1

(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



## GYZD 系列数控自动加药机

广州有色金属研究院选矿所设备中心生产的 GYZD 系列数控自动加药机采用微机控制,每台主机可同时控制 128 个加药点.每点的给药量范围每分钟数千毫升到零点几毫升,误差小于 5%.该机利用微机的强大功能,设计出极好的用户界面,全中文提示,使用简单方便;具有年月日统计和打印功能,便于总结生产经验,提高作业指标.

该机各种控制电路均采用集成器件设计而成,集成度高,性能可靠.执行机构采用高质量的新型给药专用电磁阀,保证加药机长期安全运行,并具有防腐能力,可用于酸碱溶液的添加.

地址:广州市天河区长兴街广州有色金属研究院选矿所 邮编: 510651

网址: http://www.gzrinm.com

电话: 020 - 37239066、61086392、37239220、37239221 传真: 020 - 37238535

GYZD自动加药机