

SPACE EXPLORATION SYMPOSIUM (A3)  
Mars Exploration – Part 1 (3A)

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CHINESE YINGHUO-1 MARS EXPLORATION SPACE PROBE: DESIGN, TECHNOLOGIES AND  
EXPERIENCE**Abstract**

Yinghuo-1 was a Chinese Mars-exploration space probe, intended to be the first Chinese spacecraft to explore Mars. It was launched from Baikonur Cosmodrome, Kazakhstan, on 8 November 2011, along with the Russian Fobos-Grunt sample return spacecraft. Yinghuo-1 was a low-cost multifunctional autonomous small satellite. In this paper, the primary scientific objectives, design and the advanced technologies (including ultra-long-range communication technology, deep space exploration attitude determination and control technology, thermal control technology, modular electronic technology, ground testing and simulation technology etc.) of Yinghuo-1 Mars probe were introduced and analyzed. The joint ground tests and experiments that the design of Yinghuo-1 meet the requirements of the special environment for mars exploration mission. The technologies and flight data are valuable references for China's future Mars exploration projects.