

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

Author: Prof. Jianwen Hou

Shanghai Academy of Spaceflight Technology (SAST), China Aerospace and Technology Corporation
(CASC), China

Prof. Gang Heng

Shanghai Academy of Spaceflight Technology (SAST), China Aerospace and Technology Corporation
(CASC), China

Dr. Yingzhi Chu

Shanghai Academy of Spaceflight Technology (SAST), China Aerospace and Technology Corporation
(CASC), China

Ms. Yunyi Hou

School of Astronautics, Harbin Institute of Technology, China

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.