

## IAF SPACE PROPULSION SYMPOSIUM (C4)

## Liquid Propulsion (1) (1)

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KEYNOTE: OVERVIEW ON DEVELOPMENT OF LIQUID ROCKET ENGINES FOR HEAVY  
LAUNCH VEHICLES IN CHINA**Abstract**

Liquid rocket engines are the core parts of heavy launch vehicles in China. They represent the milestone of national space propulsion technologies and the premise of China's major aerospace projects such as manned Lunar exploration, deep space exploration and space infrastructure development. To meet the requirements of the first stage, second stage and third stage for the heavy launch vehicles, study and research on key technologies of 500tf LOX/kerosene engine, 220tf LOX/LH2 engine and 25tf LOX/LH2 engine have been carried out. The overview on development of these liquid rocket engines will be presented. The 500tf LOX/kerosene engine has two-thrust-chambers with high pressure staged combustion, swinging after pump and staged startup process. The 220tf LOX/LH2 engine has high pressure staged combustion system with a single fuel-rich preburner driving the high pressure turbopumps in parallel. The 25tf LOX/LH2 engine has the closed expansion cycle. Those engines represent China's top level in liquid rocket propulsion technologies with characteristics of non-toxic, high performance, high reliability and wide thrust range. Based on the basic research, technology studies and innovations, the first full-system test of 500tf LOX/kerosene engine and 25tf LOX/LH2 engine, semi-system test of 220tf LOX/LH2 engine have been successfully completed. Comprehensive breakthroughs in key technologies of these engines have laid a solid foundation for the development of heavy launch vehicles, and have dramatically improved China's liquid rocket propulsion technologies.