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Author: Ms. Anne Caraccio

National Aeronautics and Space Administration (NASA), United States, Anne.Caraccio@NASA.gov

Dr. Paul Hintze

National Aeronautics and Space Administration (NASA), Kennedy Space Center, United States,  
Paul.E.Hintze@nasa.gov

ATMOSPHERIC PROCESSING MODULE FOR FUEL AND WATER PRODUCTION ON MARS: AN  
ENGINEERING MODEL AND INTRINSIC KINETIC STUDY OF THE SABATIER REACTOR

**Abstract**

The Mars Atmosphere and Regolith COLlector/PrOcessor for Lander Operations (MARCO POLO) project is designed to build and demonstrate a methane and oxygen propellant production system in a Mars environment. MARCO POLO could arrive on the surface of Mars prior to human crew arrival and produce liquefied methane fuel, hydrogen and oxygen for crew life support. Work at the Kennedy Space Center (KSC) has focused on the Atmospheric Processing Module (APM). The Martian atmosphere consists of approximately 95