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Alternative propellant for spatial propulsion[1] LAHIB BALIKA, TITAINA GIBERT, STÉPHANE PELLERIN, GREMI — The xenon is the most often propellant used for plasma spatial propulsion due to its low ionization potential and its high atomic mass. Nevertheless for long time missions; the thrusters need to carry an initial heavy total mass of propellant. A solution to reduce the weight of the propellant is to increase the autonomy of the thruster. If the propellant can be extracted from the environnemental atmosphere, the life time of the thruster is improved. We present a Hall thruster initially optimized for operating with xenon. This thruster has been tested in the GREMI facility with nitrogen as propellant. The ionization potential, the mass and the diatomic molecular aspect change the behavior of the plasma plume. Our investigation is based on the measurement of discharge current, tension and comparison with the operation with xenon.

[1]This work has been done in the framework of the french GDR "propulsion par plasma dans l'espace."

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