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ANALYSIS OF POSSIBLE EUTECTIC COMPOSITION OF FUEL AND BLANKET SALTS FOR
LIQUID FLUORIDE THORIUM REACTOR ON MARTIAN SURFACE

Abstract

With newly landed Perseverance Mars rover utilizing the power of the atom the question of effective power in extraterrestrial environment, especially on Mars, turns in the direction of nuclear even more prominently. With many options in that field considered, reworked and tested, perhaps one of the most promising is Liquid Fluoride Thorium Reactor, which can be modularly produced, mounted, and gives the best results with the least risk. Optimizing for its effectivity brought research on in-situ production of its salt components and while it shows great promise, possible eutectics should be considered. This paper stands as a research and analysis of such eutectics' composition, in order to avoid the usage of beryllium and other harmful and rare components as well as optimize the reactor for in-situ production and functionality in Martian environment.