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IN-SITU PRODUCTION OF REAGENTS FOR LIQUID FLUORIDE THORIUM REACTOR ON MARS SURFACE

Abstract

Even though the thought of colonizing planets of the outer space has been in humanity's minds now for centuries, the technology of today and recent successes in space exploration make those human settlements a real-life possibility. Such projects render a vast array of questions, many of which must be answered with technologies operating on terms of environments different to those societies have been used to. This age of space' possibly the most important requirement is efficient power. With more and more countries building power plants and broadening ongoing research, nuclear power has proven to be the most efficient, and thus a valid candidate for powering human colonies and preparation processes. Significant improvement and risk minimisation of usage of molten fuel reactors over traditional solid fuel ones make them the best choice. Taking into consideration the limitations and the need of self-sustainability, maintaining the process using the planet's own resources is an important criteria to be met. This paper covers the research on in-situ production of reagents needed for a particular type of molten salt reactor, a liquid fluoride thorium reactor, on the surface of Mars.