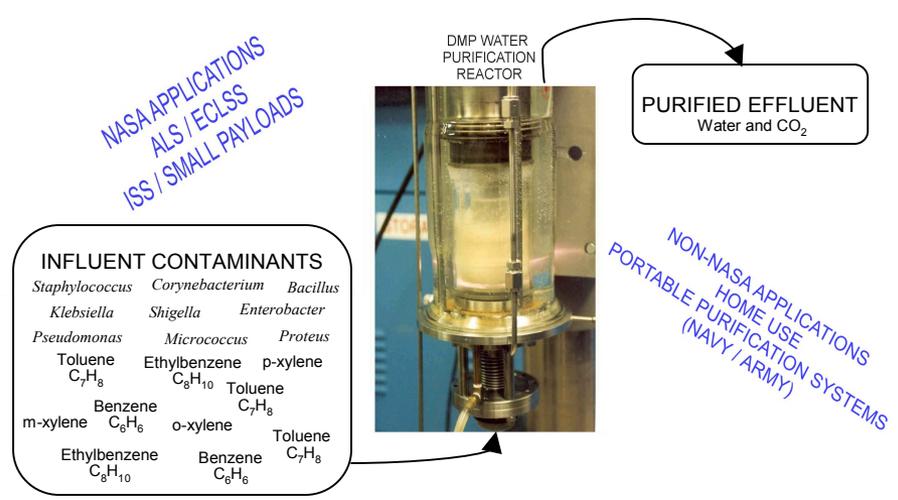


Dense Medium Plasma Water Purification Reactor

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 Proposal No: X12.07-9723

Identification and Significance of Innovation

- Versatile and highly efficient water purification process without formation of particulates.
- Use of dense medium plasma (DMP) to destroy organic and microbial contaminants.
- Highly efficient flow through-system with no expendable materials; less than 2 minute processing time for 200 ml reactor.
- Unit can be compact and portable (current prototype is 200 ml requiring 200W to operate).
- Plasma technology can be used to purify water waste streams.



Technical Objectives

- Optimize DMP water purification reactor design for NASA ALS use.
- Build prototype DMP water purification reactor.
- Measure reactor water purification efficiency.

Work Plan

- Task 1. Review and specify goals for Lunar/Mars Water Purification Requirements
- Task 2. Establish Performance Baseline
- Task 3. Optimize Reactor Design
- Task 4. Manufacture Optimized Prototype Reactor Sized for ECLSS
- Task 5. Complete Performance Evaluation
- Task 6. Assess Reliability and Risk

NASA Applications

ISS ECLSS or other ALS water recovery system.
 Mars / Lunar / CEV ALS systems.
 Reactor can be sized for small payload use.

Non-NASA Applications

Municipal water purification
 POE/POU for home, office building, or industrial use
 Portable water purification units for military (Navy / Army)
 Aircraft, submarine, and ship potable supplies

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