Water Spherification: Making Water Transportation and Consumption More Efficient for Astronauts While in Space

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The purpose of this project was to engineer an alternative method for transporting water into space by using the process of frozen reverse water spherificaiton. Moreover, the problem of transporting water into space was also tested against three environmental conditions. The spheres were constructed with sodium alginate and calcium lactate gluconate. The sphere solution consisted of 4.7g of calcium lactate gluconate per one cup of water, while the alginate bath used to gel the spheres was 1.18g per one cup of water. The calcium solution was placed in trays and put in the refrigerator and then gelled in the alginate bath. Each tube consisted of eighteen spheres and two cups of distilled water. Tubes were tested in three environmental conditions. Results indicated that the spheres thrived in temperatures ranging from 10 degrees Celsius to 23 degrees Celsius. If this method of packaging was accepted by NASA, the two cups of distilled water in the tubes would be used to hydrate astronauts' food, while the spheres would be used for consumption.

Awards Won:

NASA: Second Award of $750