Development of a Biobased Carbon Adsorbent for Treating Emerging Contaminants in Recycled Water on the International Space Station

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Recycled water on the International Space Station (ISS) has shown occasional contamination by dimethyl sulfone ($DMSO_2$). This contaminant can have harmful effects on the Environmental Control and Life Support System (ECLSS), a vital part of the ISS. This work focuses on combining biobased ionic liquids with a biobased granular activated carbon (GAC) to remove $DMSO_2$ from recycled water. Uncoated GAC has shown only a 32% removal efficiency in removing $DMSO_2$, thus demonstrating the need for an ionic liquid coated GAC. This study has the potential to help meet NASA's Mission Directorate research priority of waste management and water recovery of the ECLSS, an area of focus at the Johnson Space Center.