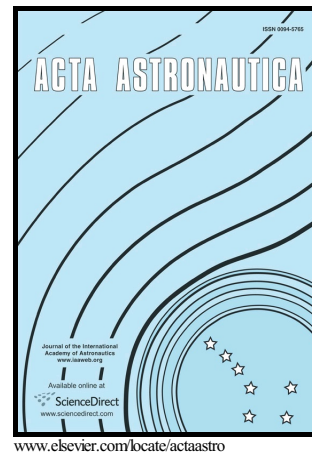


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Synthesis, characterization and application of ion exchange resin  
as a slow-release fertilizer for wheat cultivation in space

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### Abstract

In addition to the bio-regenerative air revitalization, water recycling and waste management systems and their associated challenges, enhancing the crop yield with less fertilizer input for sustainable food production in space is also a challenge that needs to be overcome. The purpose of this study is to investigate the feasibility of applying ion exchange resin as a slow-release fertilizer for wheat cultivation in space. Strong-acid cationic exchange resins and weak-base anion exchange resins soaked in 1X, 5X, 10X and 15X Hoagland nutrient solutions, respectively, were used as fertilizers in

<sup>1</sup> Both authors contributed equally to this work.

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