

Growth of Struvite Crystals in Synthetic Urine Using Magnesium Nitrate

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Abstract : Urine diversion toilets have become popular as a means of solving the challenges in sanitation. As a result, the source-separated urine must be adequately treated so that it can be disposed of safely and valuable struvite can be extracted for use as fertilizer. In this study, synthetic urine was prepared, and struvite crystallisation experiments carried out using magnesium nitrate. The effect of residence time on crystal growth was studied. At residence time of 10, 30 and 60 minutes, mean particle sizes were 17, 34 and 53 μm showing that with higher residence times, larger crystal sizes can be achieved. SEM analysis of the crystal showed that the resultant crystals had the typical morphology of struvite crystals.

Keywords : struvite, magnesium nitrate, crystallisation, urine treatment

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