

Supplementary document:

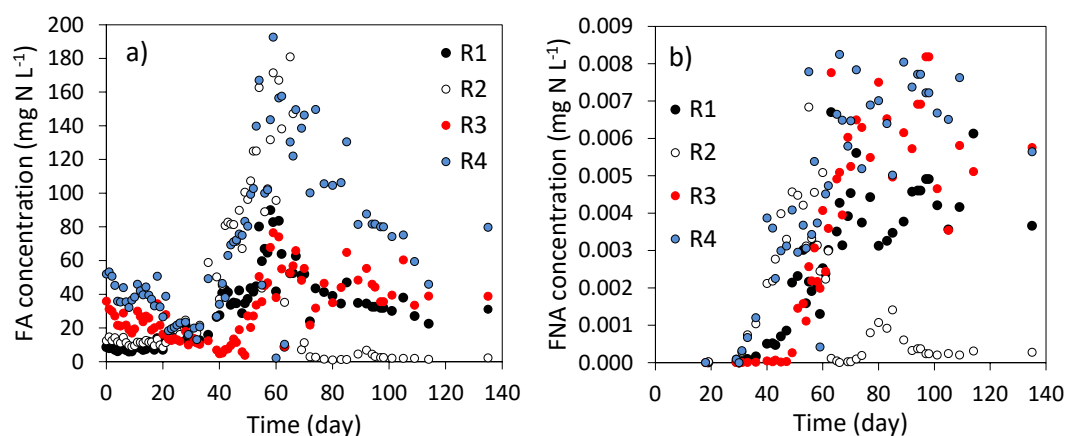


Figure S1. Concentrations of free ammonia (FA) (a) and free nitrous acid (FNA) (b) over the operation time with the increased influent $\text{NH}_4^+\text{-N}$ concentration.

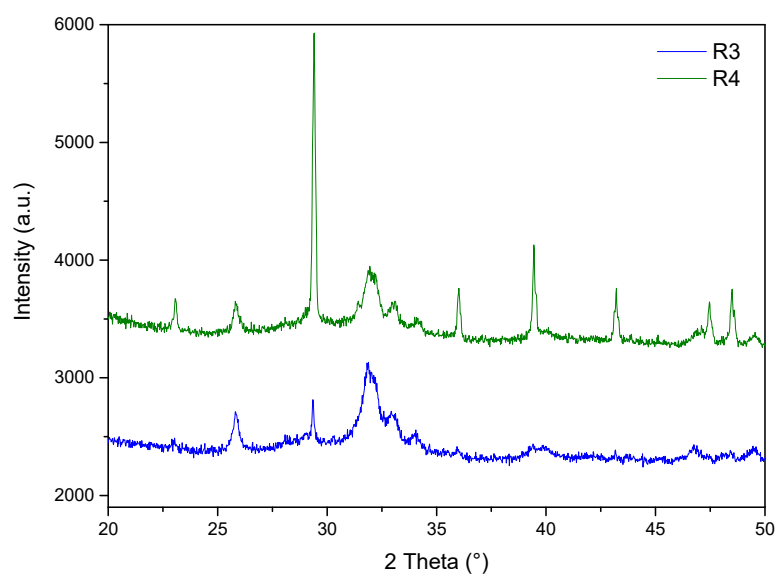


Figure S2 The inorganic solid phases present within granules from R3 and R4 on day 121 by XRD analysis.