Electronic Supplementary Material (ESI) for Environmental Science: Water Research & Technology.


# Supplementary material

Table S1. Sequential extraction method of various P species.

| Step | Extractant | Time | P fraction | P species |
|---|---|---|---|---|
| 1 | / | / | $H_2O$-P | aqueous P |
| 2 | 0.1 M NaOH | 18h | NaOH-P | P bound to Fe, e.g., P in $Fe_3(PO_4)_2 \cdot 8H_2O$ in this study |
| 3 | 0.11 M $NaHCO_3$ + 0.11 M $Na_2S_2O_4$ (BD) | 0.5h | BD-P | P adsorbed to Fe oxides |

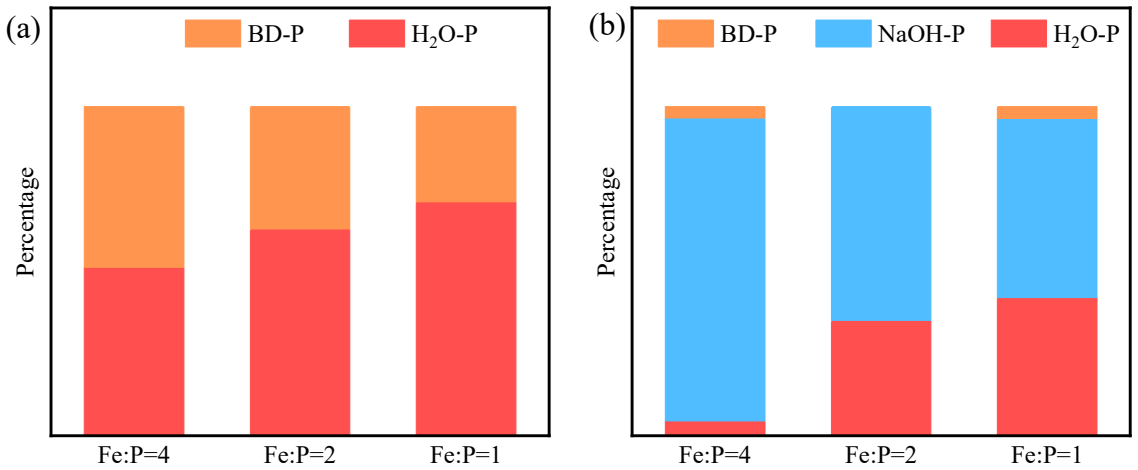


Fig.S1 Analysis of phosphate species in the sterile control group (a) and in Fe/P ratio of 4, 2 and 1 batches (b) of ferrihydrite.

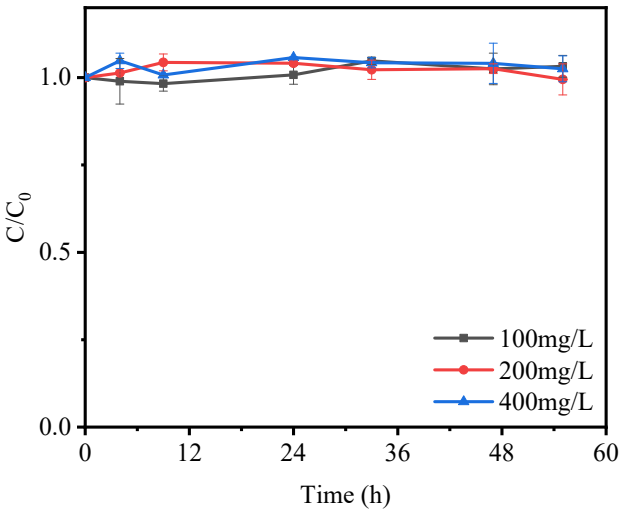


Fig.S2 The concentration of $PO_4^{3-}$ with incubation time in control group without ferrihydrite. The initial concentration of $PO_4^{3-}$ were 100 mg/L, 200 mg/L, 300 mg/L.

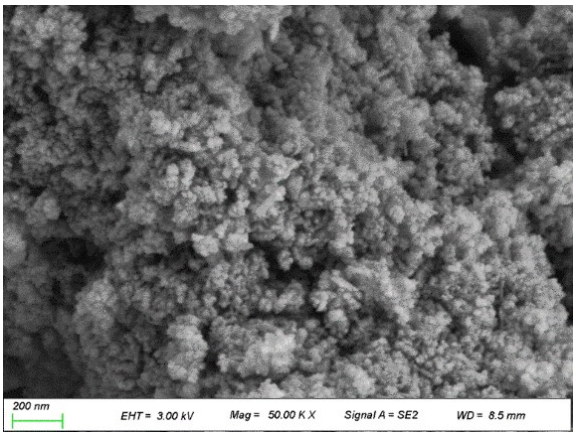


Fig.S3 SEM of biomineralization product of magnetite without phosphate.

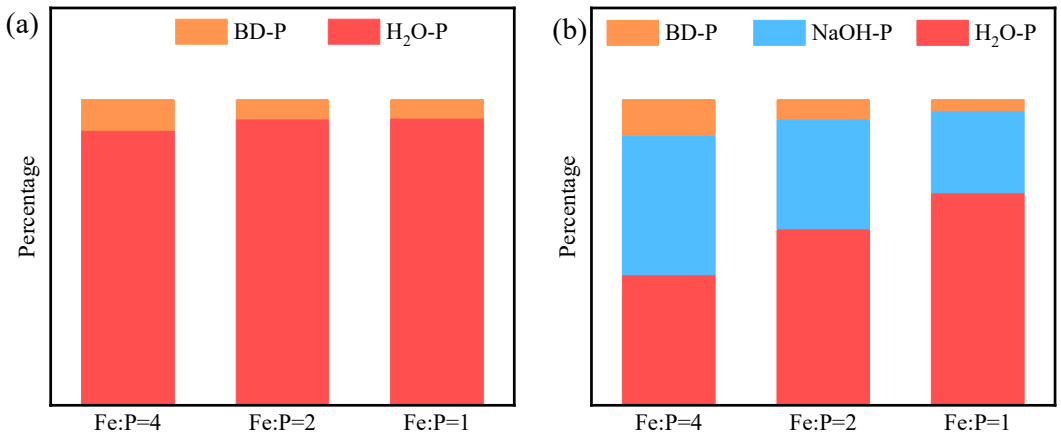


Fig.S4 Analysis of phosphate species in the sterile control group (a) and in Fe/P ratio of 4, 2 and 1 batches (b) of magnetite.

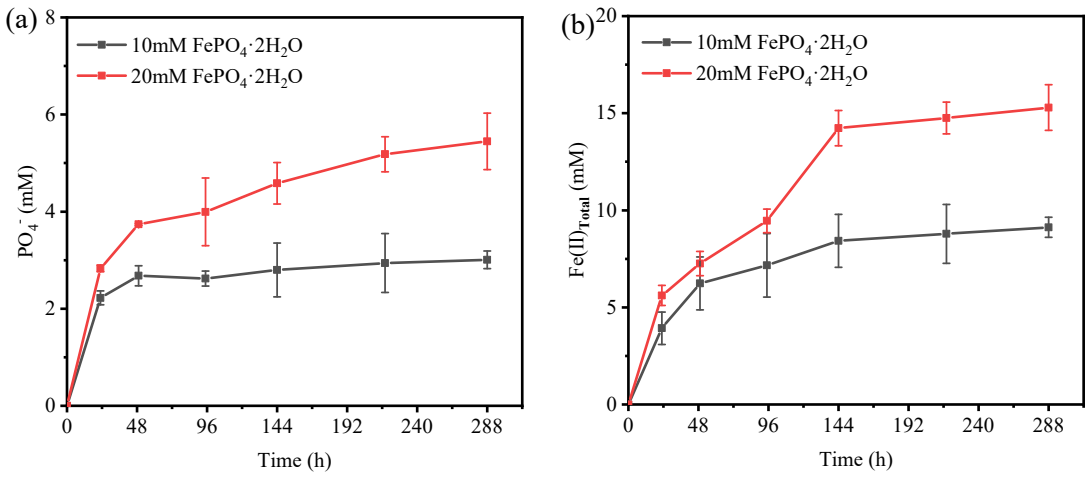


Fig.S5 The concentration of (a)$PO_4^{3-}$ and (b) $Fe(II)_{Total}$ with incubation time in $FePO_4 \cdot 2H_2O$ batches.

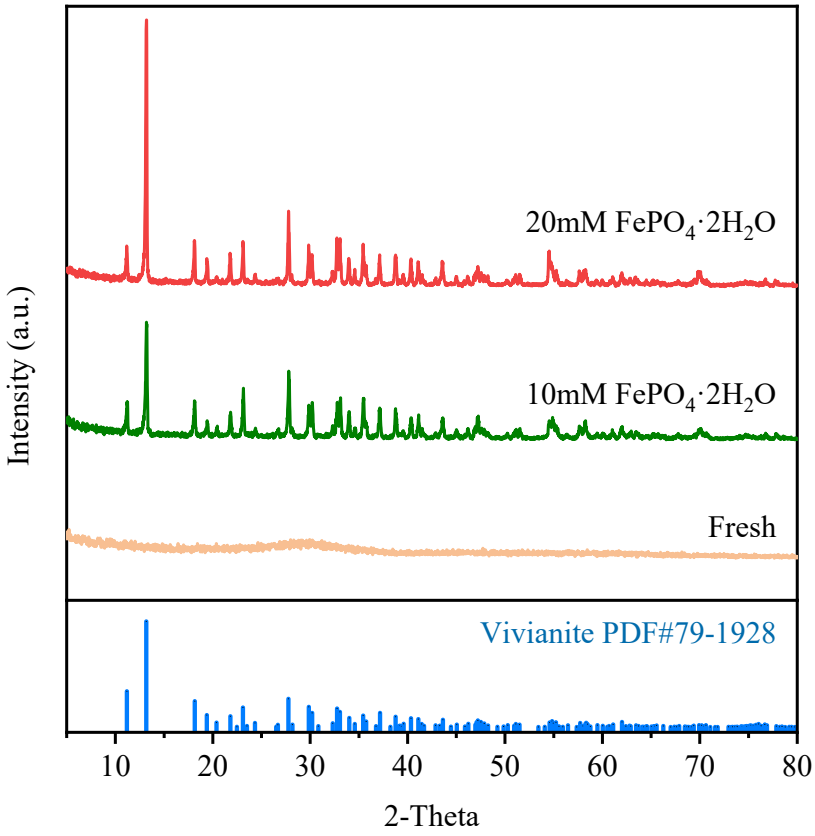


Fig.S6 XRD images of biomineralization products of $FePO_4 \cdot 2H_2O$.