

论文

pH对增强生物除磷系统酶活性的影响

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摘要:

通过比较不同pH值下增强生物除磷系统中关键酶活性的变化规律, 研究了酶活性与聚磷菌污泥产率系数及可溶性正磷酸盐(SOP)的关系. 结果表明, 在pH=6.4-7.6范围内, 脱氢酶、腺苷酸激酶和聚磷酸盐激酶的活性随着pH的增加而线性增加, 酸性磷酸酶和碱性磷酸酶的活性不受pH的影响. 聚磷菌的产率系数与脱氢酶活性、厌氧释磷速率与腺苷酸激酶活性、好氧吸磷速率与聚磷酸盐激酶活性分别呈线性关系. 表明较高的pH有利于聚磷菌的生长和提高聚磷菌的活性, 从而提高了除磷效率.

关键词: 酶活性 pH值 增强生物除磷

Effect of pH on Enzyme Activity of Enhanced Biological Phosphorus Removal System

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Abstract:

Enzyme plays an important role in enhanced biological phosphorus removal(EBPR); however, little attention was paid on this issue in the literature. Based on the investigations of the activities of some key enzymes related to EBPR, the relationships between enzyme activity and phosphorus-accumulating organisms(PAO) sludge yield coefficient, and between enzyme activity and soluble ortho-phosphorus were studied. In the range of pH 6.4—7.6, the results showed that the activity of dehydrogenase, adenylate kinase and polyphosphate kinase increased linearly with pH, while acid- and alkaline-phosphatase activity were not influenced by pH. It is found that a linear relationship was shown between PAO sludge yield coefficient and dehydrogenase activity, anaerobic phosphorus release rate and adenylate kinase activity, and aerobic phosphorus uptake rate and polyphosphate kinase activity, respectively. The results indicate that a higher pH was beneficial to the growth and the activity of PAO, which led to an improved phosphorus removal performance.

Keywords: Enzyme activity pH value Enhanced biological phosphorus removal

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