

4. CONCLUSIONS

The purpose of this research is to achieve a nitrification, denitrification coupled with phosphorus removal with minimum aeration in a lab-scale SBR. The main findings from this study are as follows:

- 1) Nitrogen and phosphorus could be removed simultaneously without nitrite and nitrate accumulation in the system. Phosphate uptake always occurred prior to ammonia oxidation during the aerobic period due to the competition of oxygen between PAOs and nitrifiers under low DO conditions.
- 2) NOB couldn't be washed out under low DO condition. Nitrogen removal was accomplished by SND via nitrate rather than nitrite, though DO in the system was controlled as low as 0.2mg/L.
- 3) Efficient phosphate uptake could occur under both nitrite and low DO conditions as long as the electron acceptor was sufficiently supplied. Thus, simultaneous nitrogen and phosphorus removal could be achieved in both continuous and intermittent flow processes with low DO aerobic phase.

ACKNOWLEDGEMENTS

This work was funded by the National Science Foundation under Grant Award No. 51168027.

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