Energy storage substances of nitrifying bacteria

Biofilm-based systems, including integrated fixed-film activated sludge and moving bed bioreactors, are becoming increasingly popular for wastewater treatment, often with the goal of improving nitrification through the enrichment of ammonia and nitrite oxidizing bacteria. We have previously demonstr ...

The consortium of microalgae and nitrifying bacteria has attracted attention owing to its advantages, such as energy- and cost-efficiency in terms of using only light irradiation without aeration. However, high light intensity can easily cause photoinhibition of nitrifying bacteria, resulting in pro ...

Chemosynthetic bacteria are organisms which obtain energy from the oxidation of inorganic molecule. Inorganic molecules act as a source of energy and get converted into organic substances. I norganic molecules, such as ammonia, molecular hydrogen, sulphur, hydrogen sulphide and ferrous iron, are used to produce the organic compounds needed by ...

The dissolved oxygen of water leaving the nitrification system should be routinely measured, and kept above 2 to 3 mg/L. Assumedly, the dissolved oxygen in the fish tanks will be much higher, and with reduced loading levels on the attached nitrifying bacteria, oxygen depletion should not be much of a concern.

Nitrification is a fundamental process in terrestrial nitrogen cycling. However, detailed information on how climate change affects the structure of nitrifier communities is lacking, specifically ...

Nitrifying bacterium, any of a small group of aerobic bacteria (family Nitrobacteraceae) that use inorganic chemicals as an energy source. They are microorganisms that are important in the ...

Nitrifying bacteria use the oxidation of inorganic nitrogen compounds as their major energy source. Reactions are catalyzed by two physiological groups of bacteria: ammonia-oxidizing ...

Ammonium is readily degraded from water by nitrifying bacteria. Such nitrifying organisms are obligately aerobic, so nitrification will occur only near the atmosphere, in the water column and surface of the wetland sediment, and possibly near the roots of wetland plants. In addition to biological use, ammonia may evaporate into the atmosphere.

Co-culture of microalgae and enriched nitrifying bacteria for energyefficient nitrification Gyutae Kwon1, Hyeon Kim1, Chulwoo Song2 and Deokjin Jahng1+ 1 Department of Environmental Engineering and Energy, Myongji University, Yongin-si, BKT Co. Ltd., Daejeon, Republic of Korea -p ro 2 of Gyeonggi-do, Republic of Korea *Corresponding author ...

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The classical concept of nitrification describes a mutualistic symbiosis where nitrite-oxidizing bacteria (NOB) depend on nitrite produced by AOB, which benefit from nitrite detoxification by NOB (Daims et al., 2016; Laloo et al., 2018).With the development of microbial sequencing technology, different genera of nitrifying bacteria have been discovered in ...

to form chloramines. The nitrification process is primarily accomplished by two groups of autotrophic nitrifying bacteria that can build organic molecules using energy obtained from inorganic sources, in this case ammonia or nitrite. In the first step of nitrification, ammonia-oxidizing bacteria oxidize ammonia to nitrite according to equation (1).

In this study, due to disadvantages in the traditional biological nitrogen removal process, such as complex and long procedures, high energy consumption, weak impact resistance, and N 2 O release, the nitrogen removal theory by heterotrophic nitrification was further analyzed by discussing the physiological-biochemical, heterotrophic ...

The in-situ nitrifying bacteria were simultaneously enriched, and the original members in the environment (Nitrosomonas and Nitrospira) remained dominant. However, the cell numbers of AOA were not ...

Seeding of nitrifying bacteria into the activated sludge process was studied both theoretically and experimentally. A simple model was developed for prediction of the effects of seeding of nitrifying bacteria from a separate stage into the activated sludge process. The purpose of seeding is ...

Nitrobacter is a genus comprising rod-shaped, gram-negative, and chemoautotrophic bacteria. [1] The name Nitrobacter derives from the Latin neuter gender noun nitrum, nitri, alkalis; the Ancient Greek noun vaktiria, vaktiri?s, rod. They are non-motile and reproduce via budding or binary fission. [2] [3] Nitrobacter cells are obligate aerobes and have a doubling time of about ...

Nitrite oxidoreductase (NXR): the key enzyme of nitrite oxidizers (including comammox) that catalyzes nitrite oxidation to nitrate, but can also reduce nitrate to nitrite. Nitrite-oxidizing ...

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