

Abstract

5 This invention relates to a method that uses heterotrophic ammonia oxidation bacteria (HAOB) to
remove carbon and nitrogen pollutants in wastewater. The method includes the cultivation of the
heterotrophic bacteria in an activated sludge environment and the removal of carbon and nitrogen from
the wastewater. According to the physiological characteristics of HAOB and the principles of
combined oxidation of carbon and nitrogen, the method is able to achieve simultaneous removal of
carbon and nitrogen under the condition that the cells do not grow. The process is able to be carried
10 out in the temperature range of 6–40°C. No excess sludge is produced in the process. The invention is
able to control the process and product composition of anaerobic ammonia oxidation through the
control of organic carbon source, and is able to realize zero-accumulation of NO_3^- -N in the
nitrification process. The invention can fully utilize existing activated sludge systems to remove
carbon and nitrogen. Therefore there is no need to build new facilities, and all carbon and nitrogen
15 removal processes can be finished in a single reactor.