Supplementary Information

Dynamic Changes of Microbiome with the Utilization of Volatile Fatty Acids as Electron Donors for Denitrification

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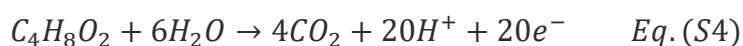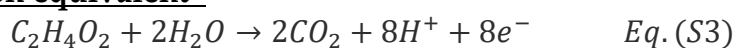[*] Correspondence: biosang@hanyang.ac.kr; Tel.: +82-2-2220-2328

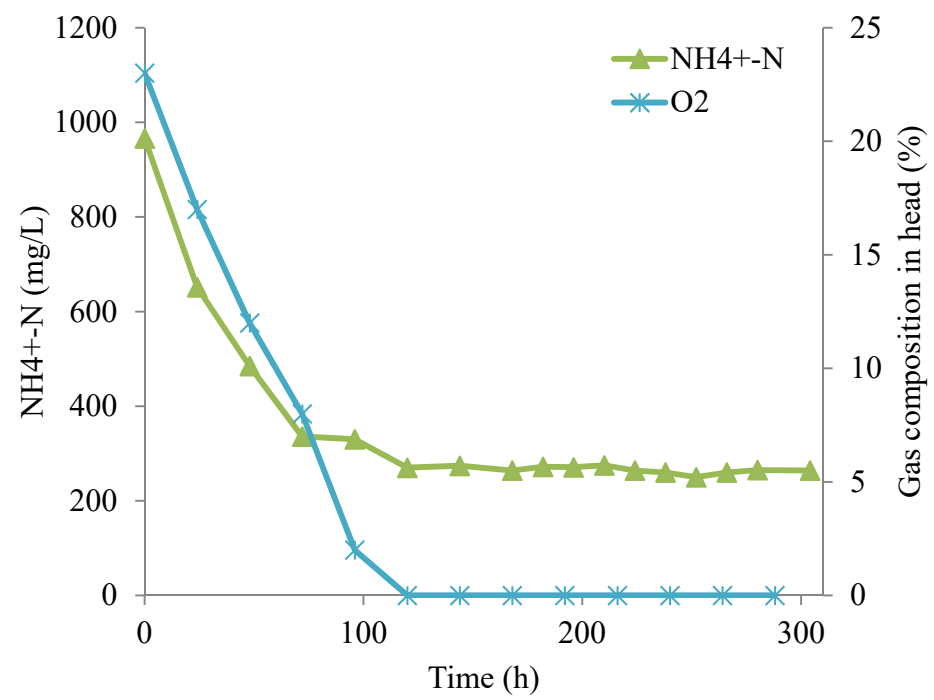[†] The first two authors listed share first authorship.

Calculations of COD equivalent

$$C_2H_3O_2^- + 2O_2 \rightarrow 2HCO_3^- + H^+$$
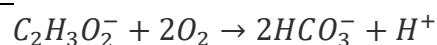
$$\frac{1\ mol\ O_2}{32\ g\ COD} \cdot \frac{1\ mol\ acetate}{2\ mol\ O_2} \cdot \frac{59.04\ g\ acetate}{1\ mol\ acetate} = \frac{0.92\ g\ acetate}{g\ COD} \qquad Eq.(S1)$$

$$C_4H_7O_2^- + 5O_2 \rightarrow 4HCO_3^- + 3H^+$$
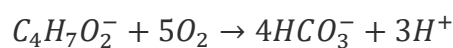
$$\frac{1\ mol\ O_2}{32\ g\ COD} \cdot \frac{1\ mol\ butyrate}{5\ mol\ O_2} \cdot \frac{87.1\ g\ butyrate}{1\ mol\ butyrate} = \frac{0.54\ g\ butyrate}{g\ COD} \qquad Eq.(S2)$$

Calculations of electron equivalent

$$C_2H_4O_2 + 2H_2O \rightarrow 2CO_2 + 8H^+ + 8e^- \qquad Eq.(S3)$$

$$C_4H_8O_2 + 6H_2O \rightarrow 4CO_2 + 20H^+ + 20e^- \qquad Eq.(S4)$$

Figure S1. The ammonium removal limitation due to oxygen depletion.
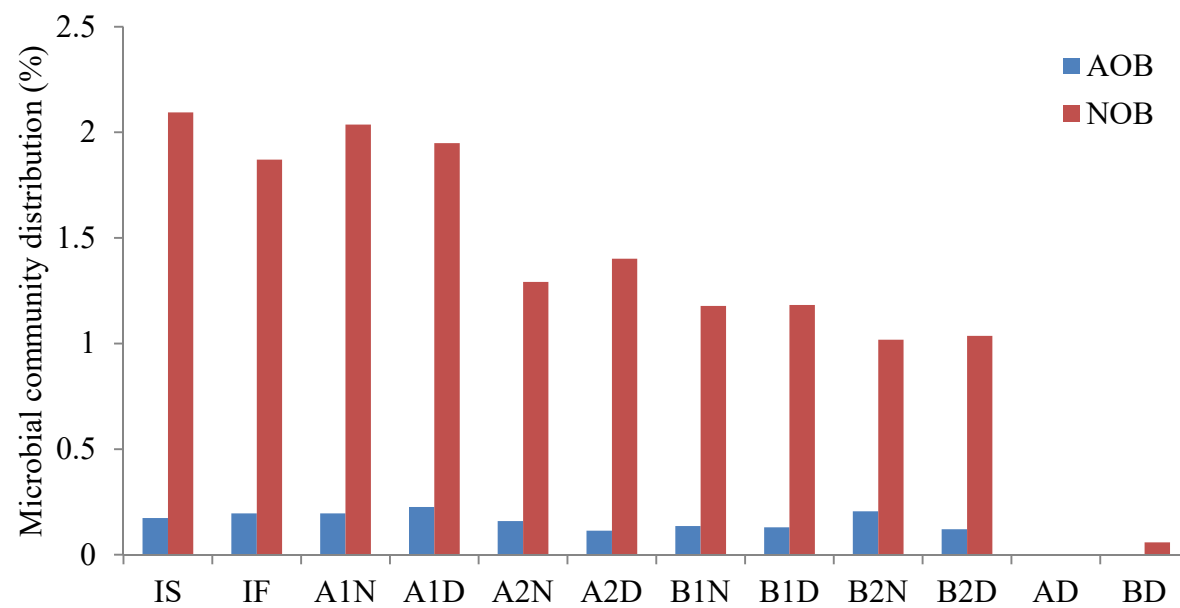
Figure S2. The distribution of ammonia-oxidizing bacteria (AOB) and nitrite-oxidizing bacteria (NOB) in each sample.