

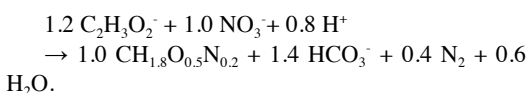
Basic study of biodesaturation by denitrification for sand specimen

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Desaturation process through denitrification

Denitrification is one of microbial processes where nitrogen gas (N₂) may be an end production through nitrate reduction by bacterial metabolisms. The reaction can be summarized like a following [1]:



N₂ gas production through denitrification can be a potential technique for desaturation of sand ground to reduce the risk of pore pressure increment in sand ground [2]. This study shows a biodesaturation effect for sand specimen by denitrifying bacteria through sand column experiments.

The results showed that growth and movement of N₂ bubbles are controlled by temperature in the pore space. It is estimated that larger amount of N₂ gas escaped through the pores in the sand specimen under low temperature due to slow growth of bubbles.

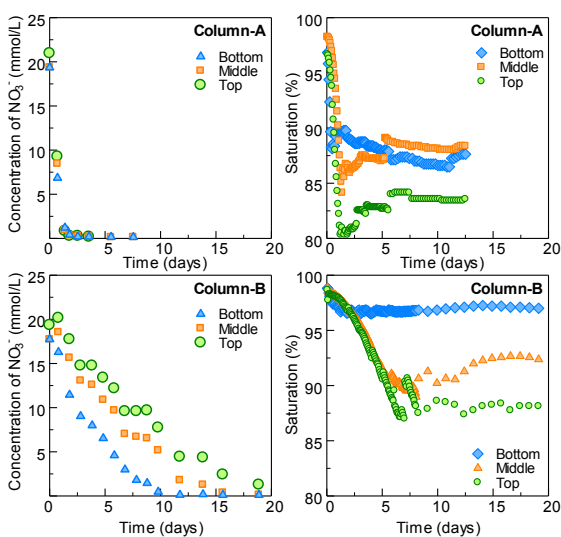


Figure 1: Nitrate decomposition and saturation change in the sand specimens with time.

[1] Heijnen & Kleerebezem (2010) *Encyclopedia of Industrial Biotechnology*, 1-24. [2] Rebata-Landa & Santamarina (2012) *Geotech. Geoenviron. Eng.* **138**, 128-137.