A novel in-situ sampling and VFA sensor technique for anaerobic systems - DTU Orbit

(10/12/2018)

A novel in-situ sampling and VFA sensor technique for anaerobic systems

A key information for understanding and controlling the anaerobic biogas process is the concentration of Volatile Fatty Acids (VFA). However, access to this information has so far been limited to off-line measurements by manual time and labour consuming methods. We have developed a new technique that has made it possible to monitor VFA on-line in one of the most difficult media: animal slurry or manure. A novel in-situ filtration technique has made it possible to perform microfiltration inside the reactor system. This filter enables sampling from closed reactor systems without large scale pumping and filtering. Using this filtration technique together with commercially available membrane filters we have constructed a VFA sensor system that can perform automatic analysis on animal slurry at a frequency as high as every 15 minutes. The VFA sensor has been tested for a period of more than 60 days with more than 1000 samples on both a fullscale biogas plant and lab-scale reactors. The measuring range covers specific measurements of acetate, propionate, iso-/n-butyrate and iso-/n-valerate from 0.1 to 50 mM (6–3,000 mg).

General information
State: Published
Organisations: Department of Systems Biology, Department of Environmental Engineering
Contributors: Pind, P. F., Angelidaki, I., Ahring, B. K.
Pages: 216-268
Publication date: 2002
Peer-reviewed: Yes

Publication information
Journal: Water Science and Technology
Volume: 45
Issue number: 10
ISSN (Print): 0273-1223
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.34 SJR 0.429 SNIP 0.574
Web of Science (2017): Impact factor 1.247
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.3 SJR 0.404 SNIP 0.637
Web of Science (2016): Impact factor 1.197
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.19 SJR 0.464 SNIP 0.594
Web of Science (2015): Impact factor 1.064
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.14 SJR 0.585 SNIP 0.683
Web of Science (2014): Impact factor 1.106
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.3 SJR 0.571 SNIP 0.701
Web of Science (2013): Impact factor 1.212
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.13 SJR 0.597 SNIP 0.659
Web of Science (2012): Impact factor 1.102
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.25 SJR 0.594 SNIP 0.631