Long-term stability of PEG-based antifouling surfaces in seawater - DTU Orbit (09/11/2017)

Long-term stability of PEG-based antifouling surfaces in seawater

Poly(ethylene glycol) (PEG) is a hydrophilic polymer that has been extensively used in the biomedical and marine environment due to its antifouling properties. In the biomedical field, PEG has been successfully used to functionalize surfaces due to its resistance to cell and nonspecific protein adsorption. However, the long-term stability of PEG has limited its use in some areas. In the shipping industry, there is a great need for long-term solutions to keep the hulls of the ships fouling-free. The long-term stability of PEG in polydimethylsiloxane (PDMS) fouling-release coatings is studied here, in both accelerated laboratory tests and real seawater conditions. This article shows how PEG-based copolymers, which have been exposed in fouling-release coatings to real-life seawater conditions, are isolated and compared to those exposed to accelerated laboratory testing with successful results. The influence of the chemistry of the PEG compounds, the chosen laboratory degrading agents, and the possible degradation pathways and products are discussed.

General information

State: Published
Organisations: Department of Chemical and Biochemical Engineering, CHEC Research Centre, The Danish Polymer Centre, Hempel A/S
Authors: Noguer, A. C. (Intern), Olsen, S. M. (Ekstern), Hvilsted, S. (Intern), Kiil, S. (Intern)
Pages: 567-575
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Coatings Technology and Research
Volume: 13
Issue number: 4
ISSN (Print): 1945-9645
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.44 SJR 0.409 SNIP 0.614
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.45 SJR 0.421 SNIP 0.83
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.5 SJR 0.51 SNIP 1.062
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.46 SJR 0.534 SNIP 1.077
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.39 SJR 0.572 SNIP 1.364
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.24 SJR 0.517 SNIP 1.007
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.571 SNIP 0.968
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.396 SNIP 0.683
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.249 SNIP 0.502
Scopus rating (2007): SJR 0.432 SNIP 0.472
Scopus rating (2006): SJR 0.606 SNIP 1.016
Scopus rating (2005): SJR 0.219 SNIP 0.201
Original language: English
Poly(ethylene glycol), PEG, PDMS, Fouling-release coatings, PEG degradation

DOIs:
10.1007/s11998-016-9801-9
Source: FindIt
Source-ID: 2303829172
Publication: Research - peer-review › Journal article – Annual report year: 2016