

TECHNOLOGY OFFER

XANTHONIC COMPOUNDS AND THEIR USE AS ANTIFOULING AGENTS

The present invention provides an eco-friendly solution to the naturally-occurring bio-adhesion of macrofouling organisms, on submerged surfaces by using small synthetic xanthonic derivatives as antifouling agents

KEYWORDS

Antifouling

Copper-free coatings

Biocides

Submerged surfaces

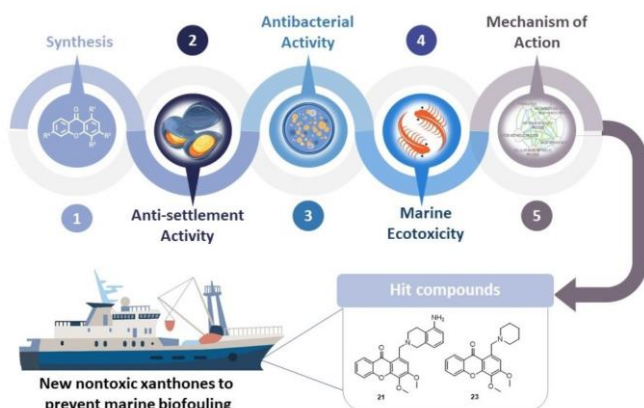
Eco-friendly agents

DESCRIPTION

Biofouling is a severe concern to numerous industrial sectors since it calls for costly high maintenance.

The maritime industry has an enormous economic burden due to the adhesion-promoted drag friction because it increases the ship's weight which leads to an increase of fuel consumption and, ultimately, more emission of greenhouse gases.

The currently used antifouling techniques imply toxic biocides (banned within the EU) that cause an even greater environmental burden to marine life.



The solution herein relates to synthetic small molecules from an important class of heterocyclic derivatives and homologs and their use as antifouling agents for protection against marine biofouling. More specifically, the present application relates to xanthonic compounds and derivatives and their use as antifouling agents.

ADVANTAGES & INNOVATIONS

This technology presents an innovative, eco-friendly, non-toxic antifouling agent to prevent organisms' underwater adhesion.

This technology is compatible with polymer-based marine coating formulations to produce antifouling paints, which ease the commercial availability of this underwater surface-protecting agent.

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INTELLECTUAL PROPERTY RIGHTS

Patents status

International Patent Application via PCT [WO/2020/128674](https://doi.org/10.3390/128674)

Priority date: 17.12.2018

Granted in China, US

Pending in EU



STAGE OF DEVELOPMENT

TRL4 - Technology validated in lab

Further development for validation in large scale setups required.



COOPERATION OPPORTUNITY

Licensing agreement.

Product development and marketability.

R&D partnership for further validation in real environment setups.



RELEVANT PUBLICATIONS

Almeida J.R., Palmeira A., Campos A., Cunha I., Freitas M., Felpejo A.B., Turkina M.V., Vasconcelos V., Pinto M., Correia-da-Silva M., Sousa E. Structure-Antifouling Activity Relationship and Molecular Targets of Bio-Inspired(thio)xanthones. *Biomolecules* 2020, 10, 1126. <https://doi.org/10.3390/biom10081126>

Resende D.I.S.P., Almeida J.R., Pereira S., Campos A., Lemos A., Plowman J.E., Thomas A., Clerens S., Vasconcelos V., Pinto M., Correia-da-Silva M., Sousa E. From Natural Xanthones to Synthetic C-1 Aminated 3,4-Dioxygenated Xanthones as Optimized Antifouling Agents. *Marine Drugs* 2021, 19, 638. <https://doi.org/10.3390/md19110638>



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