



Structural-bioactivity relationship of immobilized cyclam-derivatives in polymeric surfaces

Place of work: The work will be mainly performed at the Laboratory 8.6.42 (**BioISI**) and with some training stages for synthesis of compounds at Instituto Superior Técnico - IST (**CQE**).

Supervisors:

BioISI: Elisabete R. Silva (Ciência Vitae: <https://www.cienciavitae.pt/portal/9F18-E2D0-58B2>)

CQE: Luís Alves (Ciência Vitae: <https://www.cienciavitae.pt/portal/841F-F3CA-69F0>)

Contact: ersilva@fc.ul.pt

Abstract / MSc thesis project proposal

Water is a crucial resource for human development and survival, the reason why there was always the need to transport and retain it sustainably. However, submerged surfaces suffer from biofouling, i.e., the spontaneous colonization by aquatic pathogenic organisms, representing a major economic and environmental global concern in several sectors.

Currently, the tighter environmental protection legislation has restricted the use of most conventional antifouling strategies due to the continuous release of toxic and persistent compounds in aquatic ecosystems, also recalling for eco-friendly alternatives. In compliance with this global aim, this project aims to: i. study the structural-bioactivity relationship of a series of novel azamacrocyclic derivatives displaying antifoulant properties; ii. immobilized the most promising compounds, in terms of antifouling action and ecotoxicity, in suitable coating systems for surfaces protection against biofouling. This new class of compounds may represent alternative non-toxic systems for biofouling prevention on surfaces avoiding the release of toxic agents into the aquatic environment, also contributing to the costless and more sustainable maintenance of aqueous stream systems.

The identification of a leading antifouling compound and thus an optimized system suitable for the bio-decontamination of surfaces in contact with aqueous streams will be the principal outcome of this project.

