



PROJECT TITLE	Synthesis of solar-activated materials for the controlled release of volatile compounds – Refª. PTDC/CTM-NAN/119979/2010
BRIEF DESCRIPTION	Numerous arthropods act as vectors of human and veterinary diseases. Insecticides remain the cornerstone for the control of insects. However, conventional insecticide strategies require specialized human resources/equipment and periodical treatments. These high cost activities also promote the potential development of insecticide resistance and the risk of side-effects of public health importance. A cleaner and user friendly way of circumventing this obstacle is to develop means of controlled application of insecticides or non-toxic repellent. This proposal will focus on the development of a highly innovative approach for controlled insecticide delivery.
OBJECTIVES	The main aim of the project is to fabricate functional materials that can be either deposited or bonded to general purpose surfaces with the objective to induce a controlled release of a volatile agent (such of as an insecticide) upon being illuminated with solar light (or artificial light with a similar radiant spectrum).
IMPLEMENTATION	<ol style="list-style-type: none">1. Optimization of the deposition of the photocatalyst material - Preparation of photocatalytic coatings on new supporting mediums (e.g., flat surface or textile), harbouring insecticides or other volatile agents.2. Synthesis of the polymeric nano or micro capsules - Synthesis of polymeric nanocapsules that either will be degradable upon solar light illumination or whose pores will open under the same conditions, enabling the release of the volatile agent (such as the insecticide or repellent).3. Volatile agent encapsulation - After the nanocapsules have been efficiently synthesised, there will be a process selecting appropriate volatile agents, such as insecticides, repellents or fragrances, which will be tentatively loaded into the nanocapsules synthesis process.4. Insecticidal/repellent efficacy testing – Efficacy of the photocatalytic surfaces coated with insecticide will be evaluated regarding its effect on mosquito's mortality rates, repulsive behaviour and blood feeding reduction.5. Diffusion of results.
FUNDING AGENCY	Fundação para a Ciência e a Tecnologia (FCT)
DURATION	2012-2015
PRINCIPAL INVESTIGATOR	Carlos Tavares (PI) (CF-UM-UP); Carla A. Sousa (GHTM/IHMT);
RESEARCH TEAM / INSTITUTION	Centro de Física, Universidade do Minho (Coordinator Institution), Portugal: Stanislav Lazarov Ferdov; Instituto Higiene e Medicina Tropical/ Global Health and Tropical Medicine, Portugal: Virgílio do Rosário;



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



UNIVERSIDADE
NOVA
DE LISBOA

Faculdade de Engenharia, Universidade do Porto (LEPABE), Portugal: Fernão Magalhães, Joana Ângelo;

Centro de Química, Universidade do Minho, Portugal: Pier Parpot;

Devan - Micropolis S.A., Portugal: Raquel Vieira;

Departamento de Engenharia Química, Faculdade de Ciências e Tecnologia, Universidade de Coimbra, Portugal: Joana Madeira e Gois;