

SYNTHESIS OF MACROCYCLES AND RELATED METAL COMPLEXES OF INTEREST IN PHOTODYNAMIC THERAPY (PDT)

Photodynamic therapy (PDT) is an emerging therapeutic approach for a localized and minimally invasive treatment of a wide variety of medical indications ranging from tumors to microbial infections.

PDT entails a ternary system that combines visible light, oxygen and a light-activated drug (photosensitizer). Each factor is harmless by itself, but, if combined with the others in proper dosage and concentration, it can generate cytotoxic reactive oxygen species (ROS). Currently, PDT is clinically approved for the treatment of several medical conditions including bacterial infections, some skin diseases and cancer.

GOALS

The research is focused on:

- synthesis, characterization and photochemical activity of phthalocyanines, chlorins, bacteriochlorins and related macrocycles of interest in the photodynamic therapy of tumors (PDT) and as antimicrobial agents (APDT)
- immobilization on carriers (i.e., polymeric nanoparticles) for better targeting or scaffolds for wound-healing devices

INSTRUMENTS AND METHODS

Light sources for photochemistry studies, spectroscopic techniques (UV-Vis, multinuclear NMR).

MAIN SUBJECTS

Inorganic chemistry, Organic chemistry, Photochemistry, Material science, Pharmaceutical chemistry

RESEARCH GROUP

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COLLABORATIONS

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