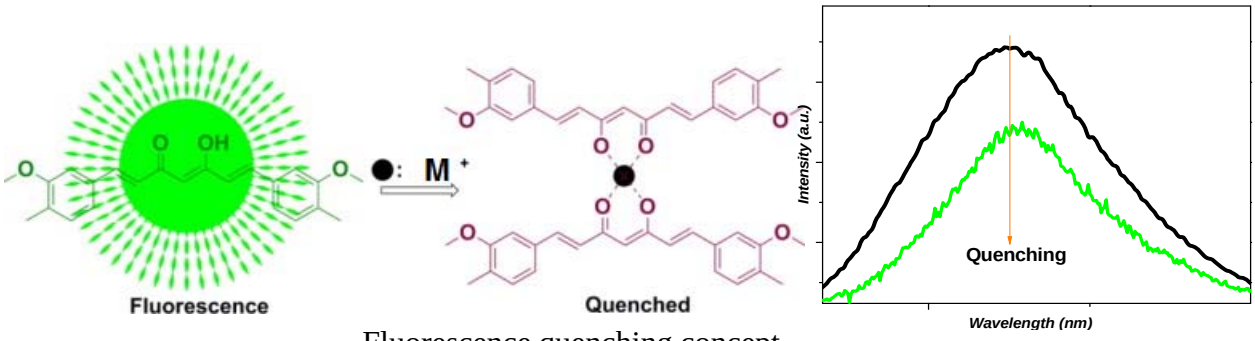
Develop of Environmental Friendly Materials for Arsenic Sensing

Determining heavy metals (e.g., arsenic) in the environment and in potable water is very important for protecting human health and the ecosystems. Around the world, potable water and wastewater treatment facilities are subject to arsenic regulations in order to guarantee a minimum exposure to arsenic and its harmful effects in the people's health and environment. There are many analytical methods for measuring the content of arsenic in water, but most of them are expensive, high-cost and use harmful chemicals. In fact, there is a need for fast, low-cost and environmental friendly methods and materials for monitoring arsenic. That could be a big benefit for the water treatment plants, field work, wastewater treatment, environmental remediation processes, scientific research facilities and companies.



Fluorescence quenching concept

In Functional Materials (FNM) at KTH, there is a growing research interest for this kind of materials for arsenic sensing, using the last advances in nanomaterials fabrication and characterization. In this project the students will explore some of the basics of nanostructured materials for heavy metal sensing application. The goal of the project is to design and fabricate sensors based on nanostructured materials and natural organic compounds that can detect heavy metals like arsenic, taking advantage of the fluorescence quenching phenomenon due to the metal absorption. The student will characterize the sensing material and evaluate their performance. The major techniques involved are Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) and Photoluminescence spectroscopy (PL).

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