PHOTOCATALYTIC HYDROGEN EVOLUTION THROUGH TGA COATED Cd-Te QDs AND Ni (II) COMPLEXES

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The huge need of renewable and non-polluting types for energy led to the production of new fuels via the direct conversion of solar energy into chemical energy, an idea that remains fascinating nowadays. Among a great variety of interesting reactions, the splitting of water into molecular hydrogen (H_2) and molecular oxygen (O_2) by visible light is potentially one of the most promising ways for the photochemical production of solar energy.[(1)] $H_2O \rightarrow H_2 + 1/2O_2$ (through visible light). [(1)]. Many systems for the photogeneration of hydrogen have been described through the years, as it is a very important fuel. Those systems typically contain a photocatalyst for hydrogen formation, a photosensitizer, and a source of protons and electrons.[(2)] Quantum dots are very intriguing semiconductors, due to their small size and synthesis, they have unusual properties.[(3)] Those semiconductors have amazing optical, quantum and electrical properties. Compared to multimolecular photosensitizers quantum dots have great photostability and for this reason, they are an alternative choice as efficient photosensitizers.[(4)] In this work we present the synthesis of green and economical one-pot method, TGA coated cadmium-tellurium quantum dots (Cd-Te QDs)[(5)] but mainly the study of their efficiency and stability as photosensitizers in photocatalytic hydrogen evolution systems with novel heteroleptic Ni (II) complexes as catalysts in the presence of two different electron donors and in solutions of different aidicity.

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Acknowledgment:

Special Research Account of National and Kapodistrian University of Athens (NKUA) is gratefully acknowledged for financial support.