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SCIENCE FOR PEACE PROJECT

Chemo- and Biosensor Systems for Safeguard and Environmental Control in Egypt

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Starting Date: 01/09/2007

Duration of Project: 4 years

Project Summary

The project should establish sensor knowledge, technology and equipment to provide safeguard for the Egyptian population and environment in case of accidents as well as terrorist attacks with material that is chemically or biologically hazardous. We successfully developed sensors for pesticides with metal-ligand complexes in a sensor array microplate. These pesticide sensors are intended to protect citizens from terror attacks using pesticides as weapons. Additionally, these sensors can be used for environmental control of soil, of drinking water and foodstuffs. The results of this project is published in the following articles in peer-refereed journals:

- 1) Azab, H.A.; Abd El-Gawad, I.I.; Kamel, R.M., (2009), J. Chem. Eng. Data, 54(11), 3069-3078.
- 2) H.A. Azab, S.A. El-Korashy, Z.M. Anwar, B.H.M. Hussein, G.M. Khairy, (2010), Spectrochim. Acta A, 75(1), 21-27.
- 3) H.A. Azab, S.A. El-Korashy, Z.M. Anwar, B.H.M. Hussein, G.M. Khairy, (2010), J. Chem. Eng. Data, 55(9), 3130–3141.
- 4) Azab, H.A.; Al-Deyab, S.S.; Anwar, Z.M.; Ahmed, R.Gh., (2011) J. Chem. Eng. Data, 56(4), 833-849.
- 5) Azab, H.A.; Duerkop, A.; Mogahed, E.M.; Awad F.K.; Abd El Aal F.K.; Kamel, R.M., (2011) Fluorescence and Electrochemical Sensing of Pesticides Methomyl, Aldicarb and Prometryne by the Luminescent Europium-(III)-Carboxycoumarin Probe, J. Fluoresc., DOI 10.1007/s10895-011-1002-4.

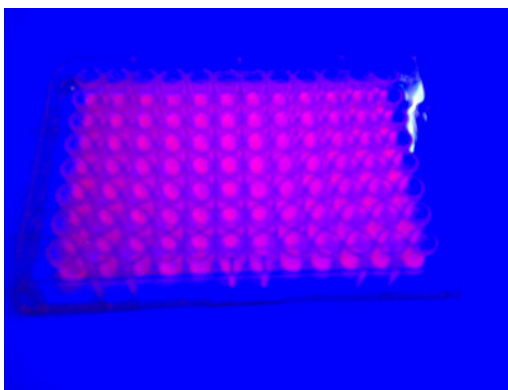


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Currently, one additional publication on the results of sensing pesticides with the lanthanide complexes is under review in final state in the “Journal of Luminescence”.

Production of pesticide sensors has started in the Center for Quality Control and Environmental Protection at Suez Canal University to warrant technology transfer from Suez Canal University to enhance public welfare in the Sinai area by testing of public samples of local agricultural products, water and foodstuffs. The first sensor microplates (shown in the picture below) with sensor spots containing a Eu(III) complex excited under UV-light can sense pesticides by changes of their bright pink fluorescence (616 nm).



All this contributes to the improvement of life conditions for the population in the Sinai area because an efficient and improved control for potential nutrition risks can be implemented. Compared to the 240 000 € spent for the whole project, this can provide savings in the health sector of > 500 000 €.



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