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1. DST-Inspire Faculty Awarded Research Project

Title : Electrochemical Immunosensor for Handheld Rapid Detection of Dengue Virus Infection
Duration : Five Years (2016-2021), Grant: Rs. 3500000 (@Rs. 700000/year)

Status

A sensor element was made using transition metal oxide (molybdenum oxide nanoparticles-modified with ruthenium(II)). Opto-electrochemical properties and cytocompatibility were investigated and the observed results are communicated for publication in journal "Colloid. Surface B: Biointerfaces". Further, optimization on the current sensitivity, enzyme/antibody immobilization and immunosensor application are needs to be explored for health care device fabrication.

2. On-going NIPER-Kolkata Funded Collaborative Projects

2.1 **Bio-friendly Nanoparticles based Sensor Platform for Active Pharmaceutical Detection**

Status: Bio-waste derived carbon nanoparticles were synthesized and proposed for a sensor studies. The analyte selected for this is flavonoid molecule potential for anti-microbial and anti-cancer activity.

2.2 **Cellular Biocompatibility & Electrochemical Studies on Curcumin Derivatives**

Status: Selected compounds of bis-pyrrolizidone-fused dispiro-oxindole analogues of curcumin were proposed for biocompatibility studies with fibroblast cell lines, potential for wound healing and transdermal based sensor element fabrication.

Research Outcome (Published/under communication)

1. Gumpu, M.B., **Veerapandian, M.**, Krishnan, U., Rayappan, J.B.B., Simultaneous electrochemical detection of Cd(II), Pb(II), As(III) and Hg(II) ions using ruthenium(II)-textured graphene oxide nanocomposite. **Talanta** 162 (2017) 574–582.
2. **Veerapandian, M.,*** Avti, P.K., **Ravichandiran, V.** Ruthenium bipyridine sensitized MoO₃ multifunctional nanostructures: Study of opto-electrochemical properties, biocompatibility and bioimaging. **Colloids and Surfaces B: Biointerfaces** (Under Review)
3. **Ravichandiran, V., Veerapandian, M.,** Manisenthil Kumar, K.T. (2017). Kampo medicine for renal inflammatory conditions. In: S. Arumugam and K. Watanabe (Eds.,) *Japanese Kampo Medicines for the Treatment of Inflammatory Disease*. **Elsevier Publication**. (Manuscript in press).
4. Marimuthu, M., Avti, P.K., **Ravichandiran, V., Veerapandian, M.*** (2017). Hybridized Graphene Nanomaterials for Electrochemical Biosensors and Drug Delivery Applications. In: A.M. Grumezescu (Ed.,) *Pharmaceutical Nanotechnology*. **Elsevier Publication**. (Manuscript in preparation).
5. Marimuthu, M., Avti, P.K., **Veerapandian, M., Ravichandiran, V.,** Balamurugan, K. (2017). State-of-the-Art Microfluidic Technologies to Engineer Cancer Tissue for Understanding its Biology and Drug Testing. In: A.M. Grumezescu (Ed.,) *Pharmaceutical Nanotechnology*. **Elsevier Publication**. (Manuscript in preparation).