

Coandă effect aerodyne – a new platform fit for monitoring environment in wetlands using sensing membranes based on CNT

Florin NEDELFCUT¹, Mihaela FILIPESCU², Marius DUMITRU²

¹”Dunărea de Jos” University of Galați, Engineering and Agronomy Faculty of Brăila, 29 Calea Călărășilor, Brăila, RO-810017, ROMANIA

²INFLPR, 409 Atomistilor street, Magurele, RO-077125, ROMANIA

Corresponding author: florin.nedelcut@ugal.ro

The original idea of the on-going AWISEM project (Air-Water Innovative System for Environment Monitoring) was to build and use, both for monitoring air and water environment in wetlands, a new concept of remote piloted aerial vehicle (also described as a „platform” or „drone”), equipped with a sort of a slim „electronic nose”, also of innovative conception. The idea of such aerial vehicle which uses Coandă effect in order to improve its propulsion efficiency, was inspired by the original aerodyne patented by the great Romanian scientist and inventor, Henri-Marie Coandă.

Within AWISEM research project we imagine, conceive and build an innovative drone, an aerodyne, which is equipped with two sets of high sensitivity sensors which will allow the environmental expert to remotely measure contaminants, either in the air or in the water. The final goal of this research project comprises two major parts, the first one being to design and build a mobile aerial/aquatic vehicle with an innovative sustentation system, able to carry on-board one of the two sets of sensors used to monitor of either aerial or aquatic contaminants.

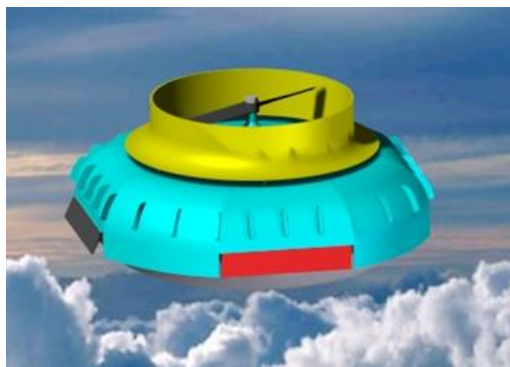


Fig. 1 Graphical representation of the AWISEM system design

The second part of this project consists in producing by laser methods and characterizing two types of sensing membranes (thin layers) based on CNT composites with high sensitivity, a gas sensor (resistive type) for ammonia detection in air and an electrochemical sensor (voltammetric type) for nitrites detection in water, these sensors being mounted on-board of the platform within the sampler device, according the contaminants to be detected.

Acknowledgment: This work was supported by a grant of the Romanian Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFISCDI, project number 459 PED/2020, acronym AWISEM, within PNCDI III