

Development of RF sensors for structural health monitoring applications in marine environment

Context

Development of RFID chipless based sensors for monitoring the degradation of concrete infrastructures localized in marine environment. The interrogation of the embedded wireless passive sensor will be made through marine drones.

Objectives

Development of RF resonators to provide frequency shift sensing capabilities associated with steel depassivation or chloride ingress in concrete.

Development of high quality factor resonator for an enhancement of the method sensitivity

Design of associated antennas for dedicated applications

References

Monitoring uniform and localised corrosion by a radiofrequency sensing method, M. Yasri, B. Lescop, E. Diler, F. Gallée, D. Thierry and S. Rioual, *Sens. Actuators B : Chem.*, 257 988-992 (2018)

A Microwave sensor for zinc corrosion detection, J. Rammal, F. Salameh, O. Tantot, N. Delhote, S. Verdeyme, S. Rioual, F. Gallée, B. Lescop, *J. Appl. Phys.* 122, 114501 (2017).

Development of wireless and passive corrosion sensors for material degradation monitoring in coastal zones and immersed environment

Rania Khalifeh, Maria Yasri, Benoit Lescop, François Gallée, Erwan Diler, Dominique Thierry, Stéphane Rioual, *IEEE J. Ocean. Eng.* 99, 776-782 (2016)

Development of a Radio Frequency resonator for monitoring water diffusion in organic coatings, R. Khalifeh, B. Lescop, F. Gallée, and S. Rioual, *Sens. Actuators A: Phys.* 247, 30-36 (2016)

Fundamental basis of electromagnetic wave propagation in a zinc microstrip lines during its corrosion, M. Yasri, B. Lescop, E. Diler, F. Gallée, D. Thierry and S. Rioual, *Sens. Actuators B : Chem.*, 223, 352-358 (2016)