

Advances in the Design of Wireless Sensor Networks for Environmental Monitoring

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Abstract : Wireless Sensor Networks (WSNs) are an emerging technology that opens up a new field of research. The significant advance in WSN leads to an increasing prevalence of various monitoring applications and real-time assistance in labs and factories. Selective surface activation induced by laser (SSAIL) is a promising technology that adapts to the WSN design freedom of shape, dimensions, and material. This article proposes and implements a WSN-based temperature and humidity monitoring system, and its deployed architectures made for the monitoring task are discussed. Experimental results of newly developed sensor nodes implemented in university campus laboratories are shown. Then, the simulation and the implementation results obtained through monitoring scenarios are displayed. At last, a convenient solution to keep the WSN alive and functional as long as possible is proposed. Unlike other existing models, on success, the node is self-powered and can utilise minimal power consumption for sensing and data transmission to the base station.

Keywords : IoT, network formation, sensor nodes, SSAIL technology

Conference Title : ICEM 2023 : International Conference on Environmental Monitoring

Conference Location : Paris, France

Conference Dates : January 23-24, 2023