

Various fibre-optic sensors are developed for use in industrial applications

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In his PhD thesis read at the Public University of Navarre, Yoany Rodríguez-García, a Telecommunications and Electronics Engineer of Pinar del Río University (Cuba), has developed sensor devices based on fibre optics. Specifically, the sensors measure physical and chemical parameters used in industrial applications. The thesis is entitled "Contribución al desarrollo de sensores utilizando fibra óptica y nanoestructuras" (Contribution to the development of sensors using fibre optics and nanostructures). Its results have been published in several scientific journals, like the *International Journal of Circuit Theory and Applications*.

In the first part of his thesis he studied the measurement of vibrations, which are very important in the predictive maintenance of all kinds of rotatory machines, in particular large electric motors. Various sensors were designed, simulated, manufactured and characterised for industrial use. "As the aim was to obtain sensors for industrial use," he points out, "modifications were incorporated during the optimization process to improve the sensitivity of the vibration sensors proposed."

He also proposed fibre-optic sensors to measure chemical parameters, in particular, humidity and pH. For this purpose, he used sensors treated with films of a nanometric thickness which are sensitive to changes in [relative humidity](#) and pH.

As the author explains, the results obtained "enable the strengths and weaknesses of the new sensors proposed to be delimited, which will

encourage a theoretical and practical contribution to the study of physical and chemical parameter sensing using fibre-optic sensors."

This research has resulted in the publication of nine articles and papers in international journals and conferences, like the *Journal of Applied Polymer Science* and the 2012 international conference on electrospinning.

Yoany Rodríguez is a tenured lecturer at the Pinar del Río University, in the department of Telecommunications, Electronics and Computing; he is also a PhD holder in Technical Sciences awarded by the José Antonio Echevarría Higher Polytechnic Institute in Havana. He is the author and co-author of about twenty scientific articles and has participated in various international scientific conferences. He is also a peer reviewer for the journals *Journal of Sensors* and the *Journal of Telecommunication Systems*.

More information: Urrutia, A. et al. An antibacterial sub-micron fiber mat with in-situ synthesized silver Nanoparticles. *Journal of Applied Polymer Science* 126-4, 1228–1235, (November 2012).
[onlinelibrary.wiley.com/doi/10 ... 2/app.36886/abstract](https://onlinelibrary.wiley.com/doi/10.1002/app.36886/abstract)

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