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3D printed smart sensors for biomedical applications

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Smart materials have one or more properties that can be changed in response to an external stimulus, such as magnetic or electric fields, pressure, stress, temperature or humidity. Among smart materials, piezoelectric ones are most widely used in so many applications. In this study, a smart polymer, polyvinylidene fluoride (PVDF) was used to fabricate pressure, humidity and temperature sensors via 3D printing. Pyroelectric and piezoelectric properties were investigated using an astable multivibrator circuit as changes in PVDF permittivity were observed according to these stimuli. Experimental results show an almost linear and inversely proportional behavior between these stimuli with the frequency response. Smart sensors are a promising tool in biomedical field, allowing patients to monitor themselves.

Biography

Grissel Rodríguez-Roldán completed her BSc degree in Bionics Engineering at Interdisciplinary Professional Unit on Engineering and Advanced Technologies (UPIITA), Mexico, in 2013 and MSc in Electrical Engineering at Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN) Mexico, in 2015. She is currently pursuing her PhD at CINVESTAV-IPN. Her research interest includes Smart Materials, Biomaterials, Polymers and 3D Printing.

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