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# Piezoelectric Effects of Materials on Bio-Interfaces

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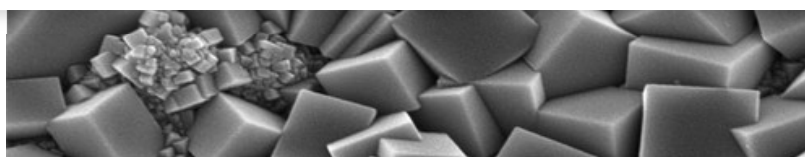
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Electrical stimulation of cells and tissues is an important approach of interaction with living matter, which has been traditionally exploited in the clinical practice for a wide range of pathological conditions, in particular, related to excitable tissues. Standard methods of stimulation are, however, often invasive, being based on electrodes and wires used to carry current to the intended site. The possibility to achieve an indirect electrical stimulation, by means of piezoelectric materials, is therefore of outstanding interest for all the biomedical research, and it emerged in the latest decade as a most promising tool in many bioapplications. In this paper, we summarize the most recent achievements obtained by our group and by others in the exploitation of piezoelectric nanoparticles and nanocomposites for cell stimulation, describing the important implications that these studies present in nanomedicine and tissue engineering. A particular attention will be also dedicated to the physical modeling, which can be extremely useful in the description of the complex mechanisms involved in the mechanical/electrical transduction, yet also to gain new insights at the base of the observed phenomena.

**KEYWORDS:** [piezoelectricity](#), [wireless stimulation](#), [excitable tissues](#), [smart bio-interfaces](#), [modeling](#)

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