

## APPLICATION OF PIEZOELECTRIC MATERIAL

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### ABSTRACT

Certain materials tend to accumulate electric charges when mechanical stress is applied to them. The piezoelectric effect is an effect that simply describes the fact that a pressure applied to a piezoelectric material will generate a voltage. Piezoelectricity and the piezoelectric effect. The word **piezoelectricity** comes from the Greek word **piezein**, which means squeeze or press and electron, which means “amber” and is an ancient source of electric charge. The French physicists Jacques and Pierre Curie discovered in 1880 that electric charges could accumulate in certain solid materials in response to applied mechanical stress. Piezoelectric materials allow conversion of energy from the mechanical domain to the electrical domain and *vice versa*. They can be used to create various sensors or actuators: applied periodic electrical signals can result in the generation of ultrasonic waves for imaging purposes.

The piezoelectric materials are usually grouped into **three categories**:

- 1- Naturally occurring (single) crystal substrates,
- 2- Ceramics with perovskite structure
- 3- Polymer films.

For example, some materials which show a more pronounced piezoelectric effect are:

Crystals (Quartz, Potassium Nibonate...)

Certain Ceramics (Lead Zirconate Titanate or PZT, Barium Titanate,...)

Biological material (Bone,...)

DNA and various proteins

