

Research on piezoelectric materials focuses on studying and developing materials that can convert mechanical energy into electrical energy and vice versa. The electric field in a piezoelectric material is an essential factor in various applications such as sensors, actuators, and transducers. This field is interdisciplinary, involving materials science, physics, engineering, and applied sciences, and has a wide range of potential applications from consumer electronics to industrial machinery and medical devices. When piezoelectric materials are subjected to mechanical pressure or stress, the structure of their crystal lattice is deformed, causing an internal displacement of charge. Overall, the interaction between light and piezoelectric materials is a fascinating phenomenon that has numerous applications in various fields, including optics, photonics, and lighting. In piezoelectric materials, the electric field arises due to the presence of an applied mechanical stress or strain. Key areas of research include: Material Discovery and Optimization: Scientists are constantly searching for new materials with higher piezoelectric coefficients, better thermal stability, and more robust mechanical properties. Phase Transitions: Many piezoelectric materials undergo phase transitions at certain temperatures. 2.3.4.2.