In non-centrosymmetric crystalline matter, marked by the pyroelectric effect, a change in temperature alters the materials spontaneous polarization, which further changes the charge density on the material’s surface. This results in a current flow through an external circuit, which differs drastically at the boundary between two crystallographic phases. Therefore, pyroelectric materials offer a great potential of low-temperature waste heat recovery by utilizing e.g. the Olsen-Cyle to convert residual heat into electric energy. A previous characterization is necessary to determine the operating conditions of the active material. This work presents a method to evaluate temperature depended pyroelectric properties, especially the pyroelectric coefficient \( p \) and the phase transition temperature \( T_C \), with the help of a computer controlled thermal/electrical stimulation and a simultaneously recording of the electrical response of the material. Here, the analysis with the Sharp-Garn-method [1] separates the pyroelectric from eventually disturbing non-pyroelectric signal, enabling the characterization of \( p \) and \( T_C \) over a broad spectrum of materials, ranging from inorganic single crystals and ceramics to organic polymers.


**Keywords:** Pyroelectricity, Phase transition