

## PO2

### The Thermally Stimulated (TSC) Current technique and its domains of application.

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The Thermally Stimulated (TSC) Current technique could be used in several domains to complete information obtained by others methods but in some case to compensate the limits of these same methods. Indeed, its aim is to reveal, on a broad temperature range (-170°C/350°C), the molecular mobility of different materials like synthetic polymers, biopolymers, pharmaceutical drugs, semi-conductors, gels and recently on inorganic catalysts. We could understand that by using this specific probe, this technique is able to reveal events associated to structural properties especially at very low temperature completing for example, Differential Scanning Calorimetry (DSC) information.

At first we wish to present the principle of this thermal analysis method as clearly as possible but we are going to focus our attention on the description of results established in different areas like:

**Polymer:** better resolution of the glass transition ( $T_g$ ) temperature of polyamide.

**Pharmaceutical drug:** characterization of the crystalline and the amorphous phases to be able to quantify this later in the final product at the end of the pharmaceutical process.

**Biopolymer:** study of a specific relaxation process in the Collagen [1]. This mode revealed at room temperature allowed to follow the ageing of this biopolymer and to check the efficient of the pharmaceutical treatments. Indeed previous studies have shown that this event is very important in atherosclerosis lesions and the use of tocopherol permits to lower it.

[1] "Thermal analysis characterization of aortic tissues for cardiac valve bioprostheses" V. Samouillan, I. J. Dandurand-Lods, A. Lamure, E. Maurel, C. Lacabanne, G. Gerosa, A. Venturini, D. Casarotto, L. Gherardini, M. Spina. *J of Biomaterials*, 531-537 (1999).