

The sol-gel process: today's a versatile technology

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In spite of the great technological advance of our days in numerous fields of Materials Science, the glass manufacture has not changed essentially with the course of the centuries. Approximately four thousand years ago, the techniques of glass preparation were based on the heating of compounds required to high temperatures ($> 1500^{\circ}\text{C}$). This limited the additive use in a glass only to the inorganic compounds, that are only the able ones that might support so high temperature without burning themselves or undergoing decomposition. This restriction supposes a severe limitation in the glass preparation doped with organic molecules, since these are disturbed even at low temperatures. In this talk, it is tried to give an idea generalized of the given solution to this old problem, that made possible for the first time the incorporation of an organic additive (organic matter) within a silica gel-glass, that was prepared at room temperature. Based on this idea, some of the aspects related to the Sol-Gel preparation at ICMM-CSIC of doped glasses with different organic molecules for applications in optics and electrooptics will be presented. Today, the recently emerging Sol-Gel Technology is quite important for processing a wide variety of materials. The Sol-Gel method has proved to be quite versatile as a result of intensive and extensive fundamental research for the last three decades. The outline applications of the Sol-Gel method will be also shortly described.

KEY WORDS: Sol-Gel, Optical properties, Electrooptical properties.