

Crystal growth of inorganic, organic, and biological macromolecules in gels

Maria J. Rosales-Hoz¹

¹*Departamento De Química, Centro De Investigación Y De Estudios Avanzados, Mexico City, Mexico*
E-mail: mrosales@cinvestav.mx

The growth of suitable crystals for X-ray crystallography studies is often a big obstacle on the way to getting a crystal structure of good quality. The growth of good protein crystals has promoted the development of several crystallization techniques¹ These difficulties prompted the development of gel techniques; agarose and silica gels were among the most studied systems.

Less effort has been put into the growth of organic and inorganic molecules which can be often crystallized by slow evaporation of solvents. There are however, systems in the inorganic and organic fields where the most common techniques do not work properly. This is particularly true in larger molecules such as supramolecular derivatives. The use of gel techniques lead to the preparation of good quality crystals of some inorganic salts which are obtained in nature.

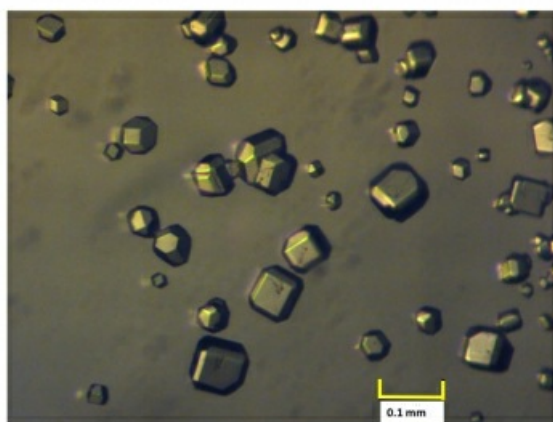
The larger number of examples is found among derivatives of the main group elements. This is mainly due to the interest of comparing synthetic crystals with those found in nature in compounds such as calcium salts.²

In this work, research will be presented on the growth of inorganic and organic compounds in several types of gels and under different conditions. Of particular interest is the work carried out on the crystallization of cyclodextrins. Very good crystals (Fig. 1) have been obtained and that has allowed the refinement of good quality crystal structures.

References:

1. Henisch, H. K., Garcia-Ruiz, J. M., *J. Cryst. Growth* 75 (1986) 195-202
2. Iafisco M., Marchetti M., Gómez, Hernández M. A., García-Ruiz J. M. . Roven N.. *Cryst. Growth Des.*(2009) 9, 4912-4926.

Figure 1. Gamma cyclodextrine grown in PEO (100k MW) in Ethanol. These crystal were grown in a Pasteur Pipette.



Keywords: [organic](#), [crystallization](#), [gels](#)