

# CRYSTALLIZATION OF SODIUM CHLORATE CRYSTALS BY EVAPORATION IN A MAGNETIC FIELD

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Sodium chlorate crystals were obtained by evaporating drops of saturated aqueous solution in both, ambient conditions, and at a constant temperature in a closed container. The aim of the research was to examine crystallization patterns after slow evaporative drying of sodium chlorate solution drops in a magnetic field.

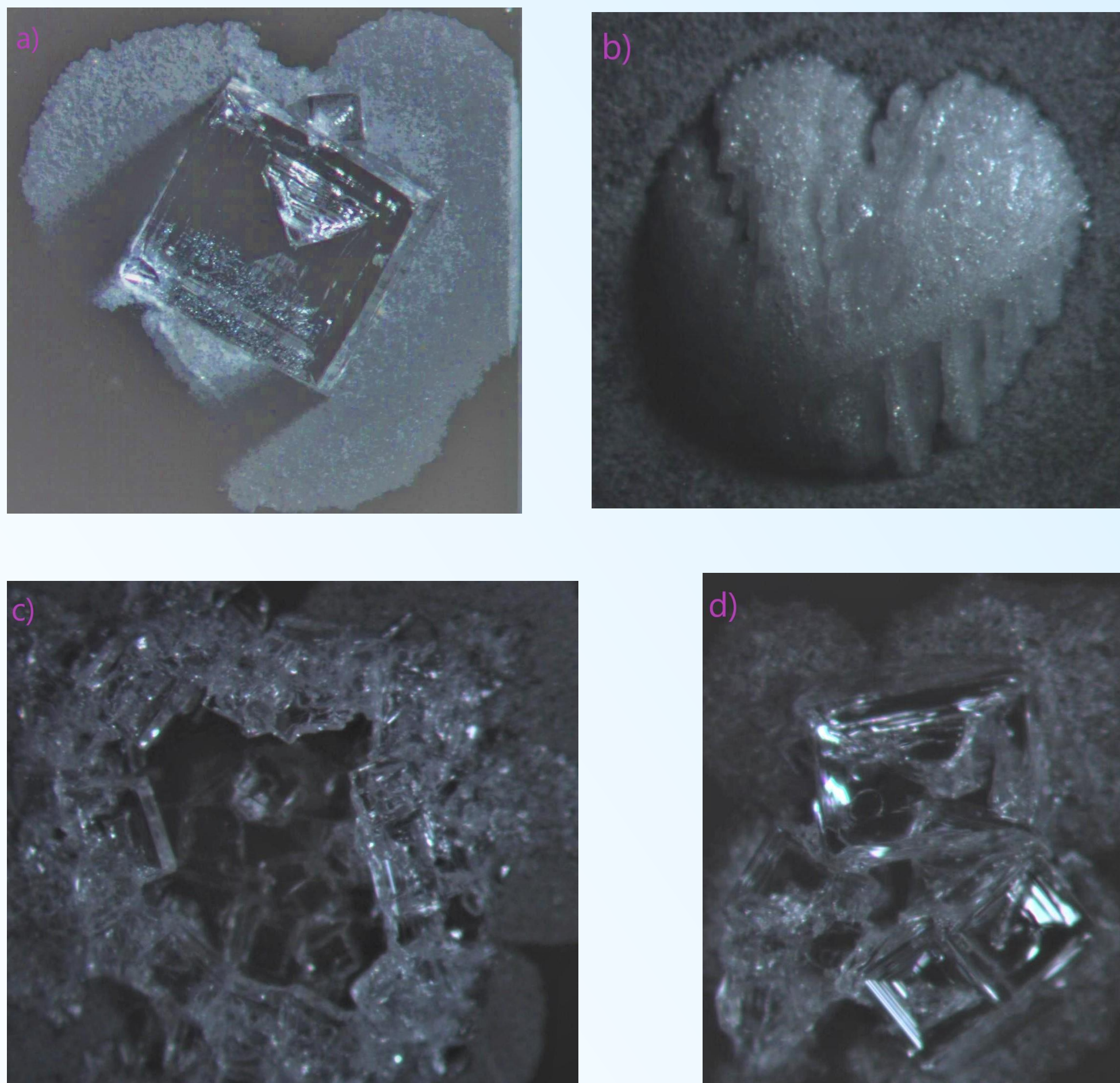


Figure 1a-d. Observed patterns for sodium chlorate after evaporation:

- a) single crystal, b) non-uniform condensed deposit, c) „ring shape“ crystal formation, d) a few single crystals.

It was shown [1] that after drying the droplets on a substrate the different crystallization patterns may be formed and some research suggested [2] that crystallization patterns are independent of evaporation rate and thermal conductivity of substrates.

In this research four possible patterns after drying were observed (Figure 1a-d), single crystal, non-uniform condensed deposit, „ring shape“ crystal formation and a few single crystals. In Figure 2 can be seen structure of non-uniform condensed deposit.

To determine the influence of the magnetic field on the crystallization, experiments were performed in zero field conditions and in the applied static magnetic field of  $(390\pm 5)$  mT.

A  $5\mu\text{L}$  droplet of sodium chlorate solution was placed on a microscope slide.

The crystals were obtained by evaporation at temperatures of  $(31.0\pm 0.1)^\circ\text{C}$ ,  $(31.5\pm 0.1)^\circ\text{C}$  and  $(32.0\pm 0.1)^\circ\text{C}$ , at which the solutions were saturated.

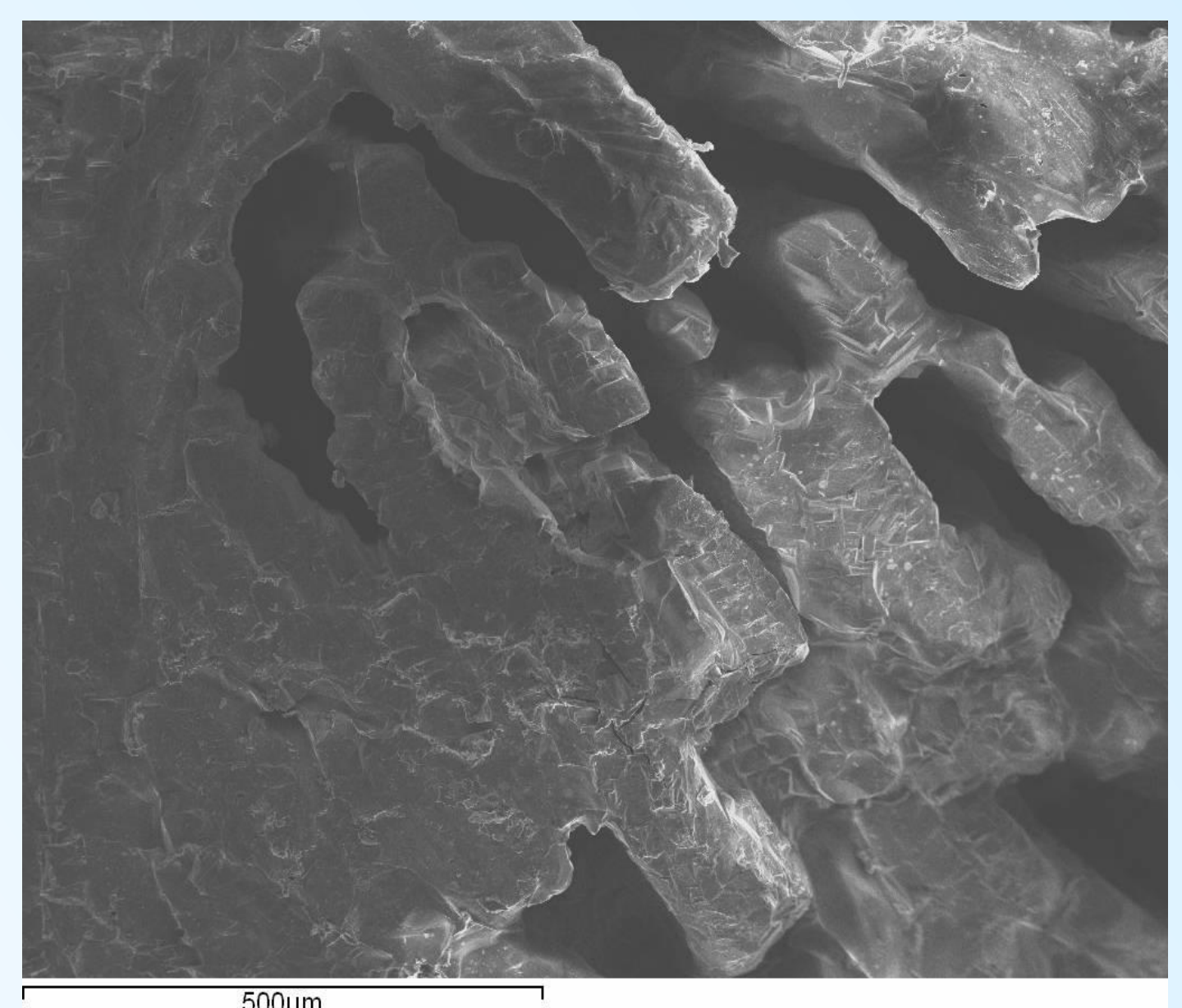


Figure 2. SEM image of observed pattern shown in Figure 1b.

## References:

- [1] Dongliang L., Rong C., Xun Z., Qiang L., Dingding Y., Yang Y., Wei L., Haonan L., and Yijing Y., *Anal. Chem.* (2021), 93, 8817–8825.  
[2] Shahidzadeh, N.; Schut, M. F. L.; Desarnaud, J.; Prat, M.; Bonn, D. *Sci. Rep.* (2015), 5.