



Opposition: Frosty patterns

Ilia Vassilev, Team Bulgaria A



5. Frosty patterns

Patterns similar to frost on a winter window are obtained if magnesium sulphate in solution is deposited on a glass surface. Investigate this effect.

Task partially fulfilled.

Theory



- Definition of frost
- Good knowledge of crystal lattice
- Mention of contact angle
- Good visual reasoning
- Theory for temperature



- No quantitative predictions from theory
- No mention of nucleation
- No theoretical explanation of contact angle
- No mention of principal of crystallization
- No mention of relationship between nucleation rate and growth rate
- Little explanation of vapor pressure

Experiment



- Proved the hypothesis for temperature and vapor pressure
- Varied multiple parameters
- Many repetitions of the experiment
- Varied 1 parameter at a time
- Clear visual data



- No different Magnesium sulfate concentrations for 1 mixture of solvents
- Didn't have a theoretical vs experimental quantitative results
- Only macroscopic measurements
- No microscopic images for the smallest crystals
- Only size, not shape
- Graph for Acetic acid with **only** 5 points
- Imperfect measurements (crystals with an angle)
- No calculation of vapor pressure

Thank you!

