

## PRESSURE CRYSTALLIZATION OF LIQUIDS

**Armand Budzianowski and Andrzej Katrusiak**

*Faculty of Chemistry, Adam Mickiewicz University,  
Grunwaldzka 6, 60-780 Poznań, Poland  
<http://hpc.amu.edu.pl>*

Several films illustrating the process of the crystallization of liquids by increasing pressure will be presented. Normally, melts are crystallized by lowering temperature below the melting point (*m.p.*) [1,2]. However, the crystallization can be also achieved by elevating pressure [3], owing to the fact that for almost all substances  $\partial(m.p.)/\partial p$  is positive; H<sub>2</sub>O belongs to few exceptions from this general rule, and in the low range of pressure only. The presented films will show the process of the pressure-crystallization of a series of organic compounds: 1,3-dichloropropane, diaminoethane and hexafluorobenzene [4]. Also phase transitions in pressurized dabco crystals [5,6] will be observed in polarized light. The single crystals obtained by this method are suitable for X-ray diffraction experiments [7-10].

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- [1] R. Boese and M. Nussbaumer, *In situ* crystallization techniques, in *Correlations, Transformations, and Interactions in Organic Crystal Chemistry* Eds. D. W. Jones, A. Katrusiak; Proceedings of the 8th International Symposium on Organic Crystal Chemistry, Poznań-Rydzyňa 1992; Oxford Univ. Press, 1994 pp.20-37.
- [2] M. F. Klapdor, H. Willmer, W. Poll and D. Mootz, *Angew. Chem. Int. Ed.* **35** (1996) 320-321.
- [3] C. R. Patrick and G. S. Prosser; *Nature* **187** (1960) 1021.
- [4] A. Budzianowski and A. Katrusiak; - *in preparation*.
- [5] J. K. Nimmo and B. W. Lucas, *Acta Cryst.* **B32** (1976) 597.
- [6] J. L. Sauvajol, *J.Phys. C: Solid St. Phys.* **13** (1980) L927-34.
- [7] M. Bujak, A. Budzianowski and A. Katrusiak; High-pressure *in-situ* crystallization, structure and phase transitions in 1,2-dichloroethane, *Z. Kristallog.* (2004) - *submitted*.
- [8] K. F. Dziubek and A. Katrusiak; High-pressure diffraction study of the molecular structure and S...S interactions in CS<sub>2</sub> - *in preparation*.
- [9] D. R. Allan, S. J. Clark, M. J. P. Brugmans, G. J. Ackland. and W. L. Vos; Structure of crystalline methanol at high pressure, *Phys. Rev. B* **58** (1998) R11809.
- [10] D. R. Allan and S. J. Clark; Comparison of the high-pressure and low-temperature structures of ethanol and acetic acid, *Phys. Rev. B* **60** (1999) 6328.