

07.1-8 INTERGROWTH IN CRYSTALS OF ZSM-5 ZEOLITE.  
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The systematic intergrowth observed in ZSM-5 zeolite crystals has been examined with transmission and scanning electron microscopy. The most frequent form of intergrowth is where adjoining crystals are rotated 90° about a common [001] axis, with intergrowth always initiated on growing [010] faces. Sections normal to [001] and [100] of the main crystal show the boundaries are curved and they can be modelled as a series of steps. The model intergrowth boundaries are between (010)/(100) and (001)/(001) planes (where the subscripts refer to planes in the main crystal and intergrowth respectively). A second form of intergrowth, associated with inclusions of impurities in the crystals, is seen as ramps on the (100) faces although the intergrowth is often initiated well below the crystal surface. Observation of both forms of intergrowths has led us to propose the likely building units involved in the formation of well defined crystals.

07.1-9 CRYSTAL GROWTH BY METASTABLE  
NUCLEATION. By B.N. Mehrotra, Department of  
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Single crystals of sodium sulphate III, a modification which is stable only in the temperature range 200 to 228°C, were obtained by metastable nucleation from aqueous solution of sodium sulphate at 50°C, and this led to its structure determination (Zeit. Krist., Bd 155(3/4) 159/163) by the author.

Similarly, crystals of sodium heptahydrate are also grown by metastable nucleation from the aqueous solution at 0°C. The powder photograph of this substance is obtained on Philips diffractometer using  $\text{CuK}\alpha$  radiation, and the results are given in the table below :

Table : d-values and relative intensities of sodium sulphate heptahydrate.

S.N.	d(Å)	Int.	S.N.	d(Å)	Int.	S.N.	d(Å)	Int.
1	5.48	99	8	2.750	40	15	2.040	70
2	5.41	50	9	2.697	30	16	1.782	15
3	5.27	70	10	2.499	25	17	1.764	40
4	4.018	50	11	2.427	15	18	1.631	68
5	3.516	40	12	2.255	17	19	1.616	35
6	3.030	35	13	2.220	15	20	1.419	18
7	2.838	40	14	2.092	20	21	1.369	28

07.1-10 ON THE ORIENTATION OF  $\text{K}_2\text{Cr}_2\text{O}_7$   
CRYSTALS GROWING FROM AQUEOUS SOLUTIONS BY  
SELF-NUCLEATION ON THE CRYSTALLIZER BOTTOM  
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The growth of single crystals on isotropic or anisotropic substrates and of thin crystalline films of particular crystallographic orientation requires a knowledge of the effect of various factors on it. The orientation of a crystal growing from solutions on the bottom of a crystallizer is determined by the surface in contact with the bottom. In this work are described and discussed the experimental results on 'contact' planes of  $\text{K}_2\text{Cr}_2\text{O}_7$  (KBC) growing by self-nucleation from aqueous solutions at 5-97°C.

It was observed that the planes of contact with the bottom of the growth vessel are always habit planes of the crystal and are affected by both external and internal factors. The external factor affecting the contact planes is growth temperature, while the internal dominating factor determining the probability P of contact planes is reticular density d of the atomic planes. It was also found that the greater the d, the greater the value of P, and that the dependence of P on d is exponential. Our experiments with a large KBC crystal on the probability of its falling in air showed that the site for nucleation is, in all probability, the bulk solution rather than the crystallizer bottom.

Our conclusions are also valid for the data reported on other inorganic and organic crystals and thin films.

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