THE GRADIENT HOT PLATE FOR DETERMINING OPTIMUM TIME-SUBLIMATION TEMPERATURES IN THE PRODUCTION OF CRYSTALS SUITABLE FOR PROFILE ANGLE MEASUREMENT

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ABSTRACT

The existence of an optimum time-sublimation temperature for the preparation of crystals having certain definite characteristics was shown in ten instances:

Ammonium benzoate	5	minutes	115	degrees	C.
Arsenious tri-iodide	5	"	140-145	"	"
Bromanil (rhombs)	5-6	"	188	"	"
Bromanil (hexagons)	5-6	"	192	"	"
Chloranil	4-5	"	164	"	"
Iodoform	6	"	95	"	"
Mercuric bromide	3½-4	"	175	"	"
Mercuric iodide	5	"	165	"	"
Mercurous iodide	5	"	175	"	"
p-Nitrophenol (Brominated product)	30	"	132	"	"

All of these optima seem to be associated with a vapor pressure of approximately 5-10 mm. of mercury.

The gradient hot plate, with the technique of its use, was developed for the preparation of these crystals. The hot plate consists of a bar of machined steel, 3 by 5/8 by 36 inches, mounted on 4-inch clay cylinders and housed in a cabinet of wood and glass, 10 by 10 by 40 inches. The flame of a microburner applied at the center of the plate supplied the heat. The temperature gradient between the center and ends of the plate resembled closely the normal cooling curve of steel.

The sublimate was produced in a cylindrical cell 16 by 4 mm. and caught on a hot microscope slide. The crystals thus produced could then be measured by means of a petrographic microscope.