

Fig. 1. Starting materials. (a) Guinier patterns of preparations 1-4. (b) Electron micrograph of sample 1 ($10'000\times$). (c) Electron micrograph of sample 2 ($20'000\times$). (d) Electron micrograph of sample 3 ($18'000\times$). (e) Electron micrograph of sample 4 ($12'000\times$). (f) Electron diffraction of a crystal of sample 1 with micrograph of diffracted crystal and indices ($20'000\times$).

TABLE 1

CRYSTALLITE SIZE OF γ -FeOOH FROM X-RAY DIFFRACTION PROFILES

Reflection	Preparation No.			
	1	2	3	4
002	—	—	210 Å	80 Å
020	780 Å	840 Å	80 Å	30 Å
040	700 Å	300 Å	—	—
080	680 Å	460 Å	170 Å	—
011	890 Å	680 Å	470 Å	—
022	900 Å	570 Å	200 Å	—
120	—	—	—	80 Å

Table 1 gives the crystallite sizes where available from x-ray reflection profiles. Figure 2 represents the crystallite size distribution, as determined from electron micrographs, for the length of needles of preparation 1. It is log normal. The needle length distribution of sample 2 was similar, while the needle breadth distributions were Gaussian. Sample 3 and 4 were too finely divided for proper counting.

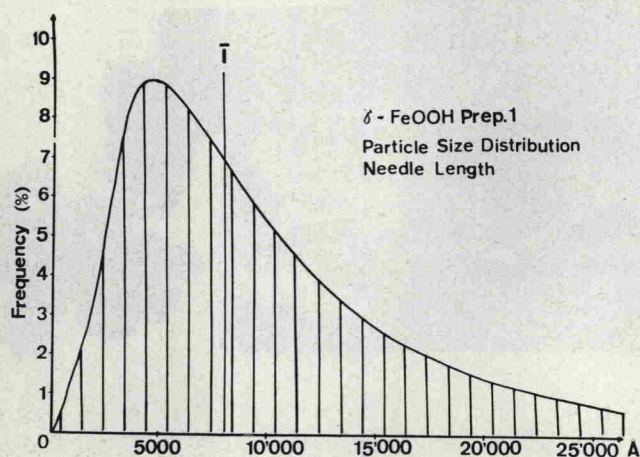


Fig. 2. Typical particle size distribution (example). Preparation 1, needle length.

The dimensions of the γ -FeOOH crystals are shown in Table 2. Samples 3 and 4 are not included, as their crystal dimensions were only estimated. No. 3 had approximately $1000 \times 200 \times 40 \text{ \AA}$ and No. 4 $2000 \times 400 \times 80 \text{ \AA}$ dimensions. The BET surface of all samples is given in Table 3, the water content in Table 4.

TABLE 2
CRYSTALLITE SIZE OF γ -FeOOH FROM ELECTRON MICROGRAPHS

	Preparation No.		Distribution
	<i>i</i>	2	
Length	8130 Å, $\delta = 2.17$	6770 Å, $\delta = 2.23$	log normal
Breadth	$1700 \text{ \AA} \pm 600 \text{ \AA}$	$1100 \text{ \AA} \pm 460 \text{ \AA}$	Gaussian
Estimated thickness	340 Å	220 Å	—

TABLE 3
BET SURFACE OF γ -FeOOH

	Preparation No.			
	1	2	3	4
BET surface ($\text{m}^2 \text{ g}^{-1}$)	14.0	18.4	119.4	91.5