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6.040103 –

**2011**

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$N$

$$X(x_1, x_2, \dots, x_i, \dots, x_N).$$

$$\bar{x} = \frac{1}{N} \sum_{i=1}^N x_i,$$

( $\dots$ ) St,  $\bar{D}$   
:

$$D = St^2 = \sum_{i=1}^N (x_i - \bar{x})^2 / N.$$

V:

$$V = \frac{St}{x} \cdot 100\%$$

( )

( )  $\Delta N/N$

$\Delta x$

( .1,2).

$L$

$x$

$\Delta N$ ,

$k-$

$\Delta N$

$N$ .

,

$$\Delta N/N = N_K (\%)$$

$K$ .

:

$$K = \sqrt{N}$$

$K$

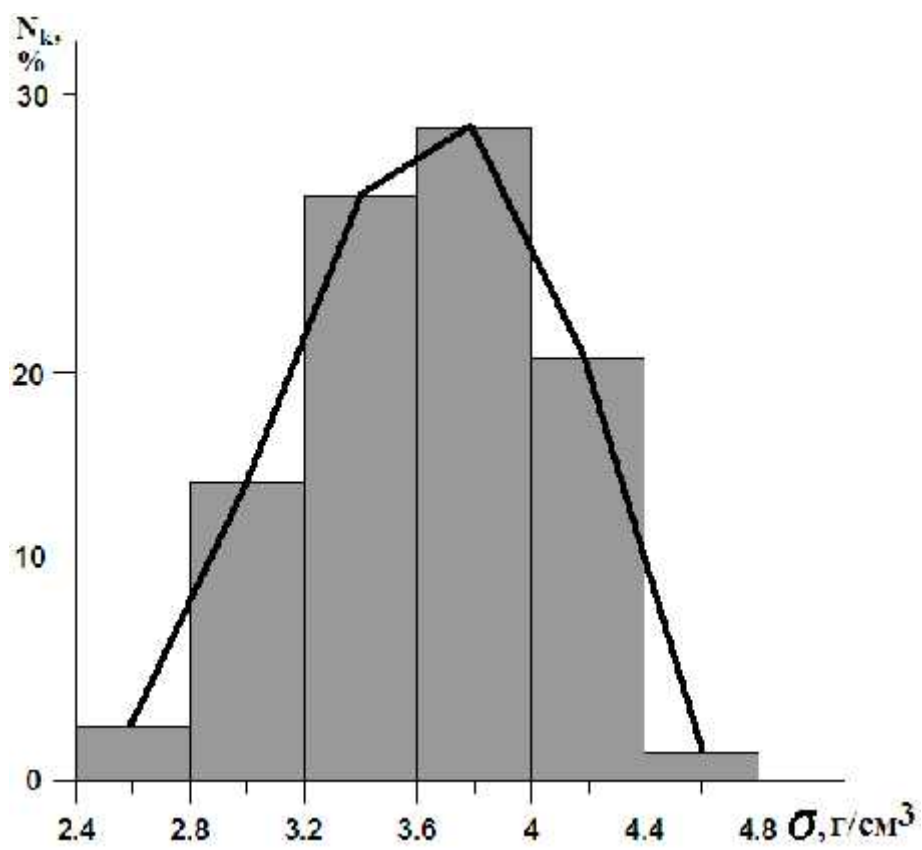
$\Delta x$

,

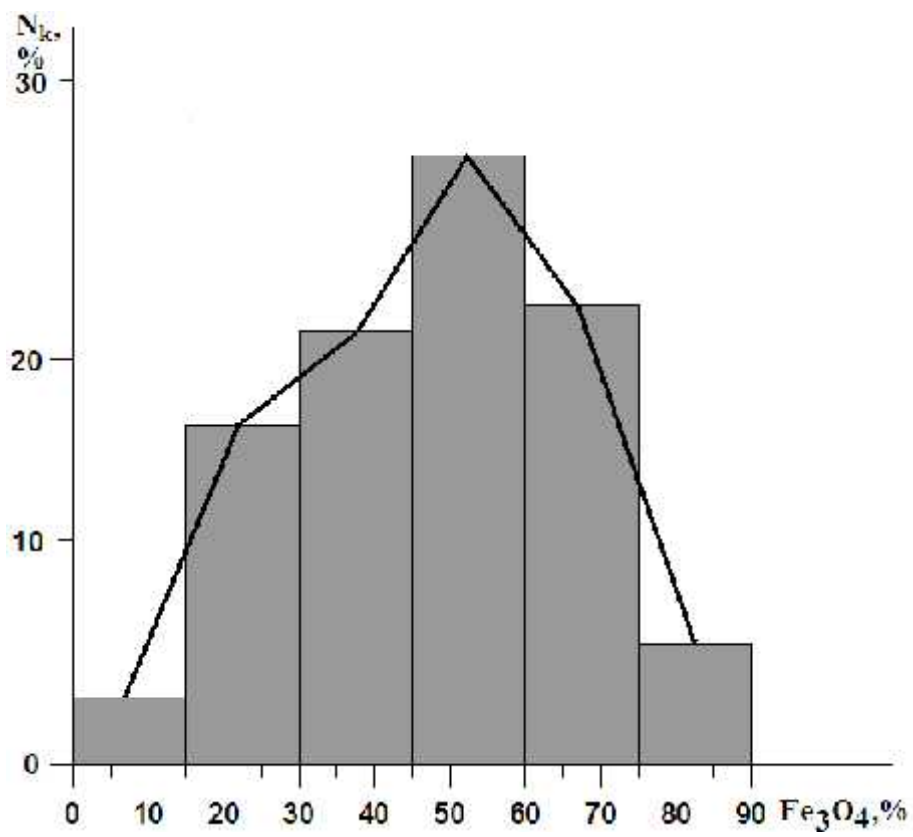
:

$$\Delta x = \frac{x_{\max} - x_{\min}}{1 + 3.32 \lg N}$$

$N_K$



. 1



. 2

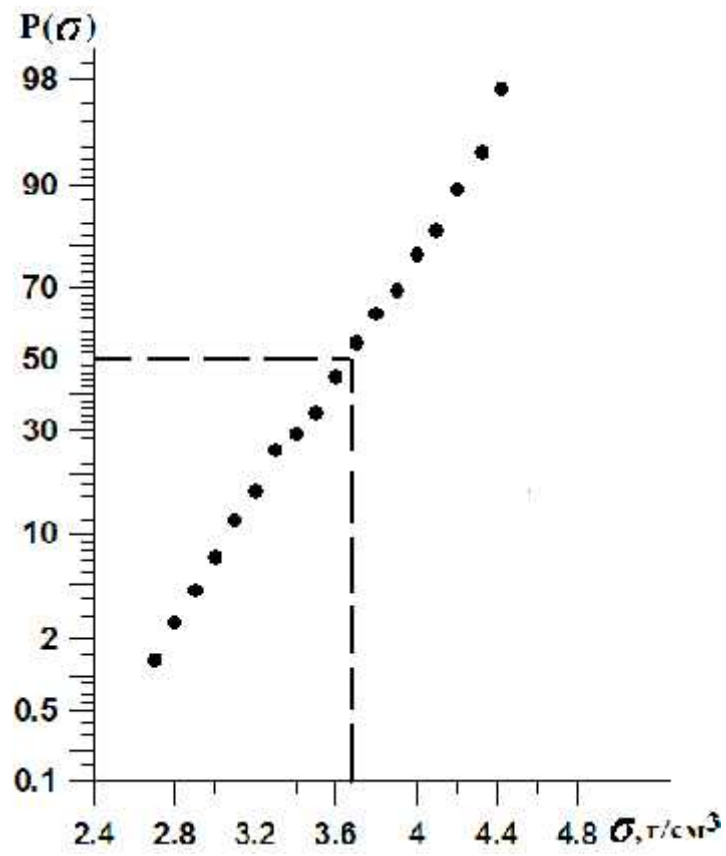
$\bar{x}$

$$f(x) = \frac{1}{St\sqrt{2f}} \cdot e^{-\frac{(x_i - \bar{x})^2}{St^2}}$$

$x_i$  -

;  $\bar{x}$  -

;  $St$  -



. 3





$$y = ax^2 + bx + c$$

$$z = (y - y_1)/(x - x_1) \quad ($$

$$y^* = ax + b,$$

(\*)

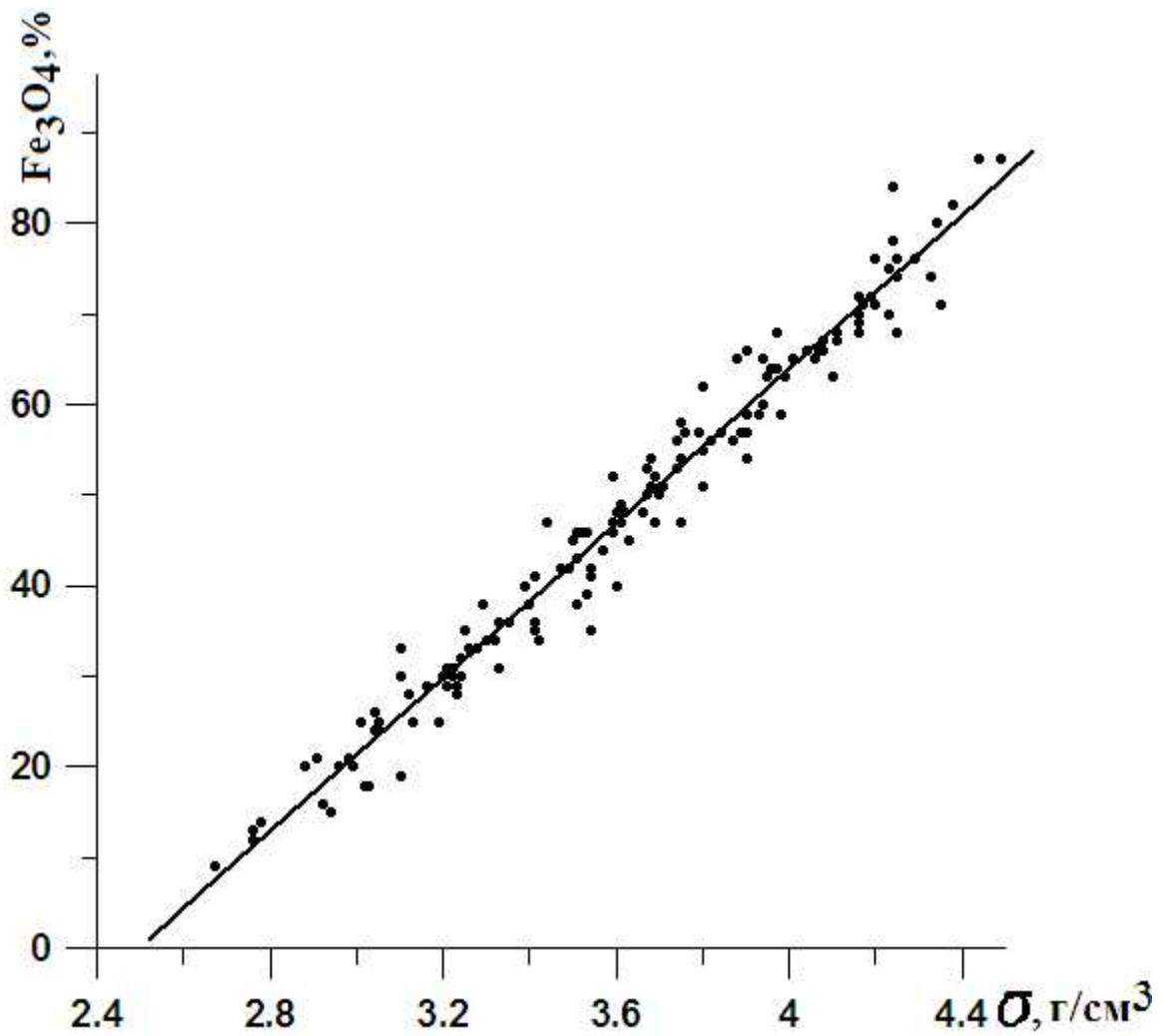
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(.4).

$$\sum_{i=1}^N [y_i - y^*(x_i)]^2 = \min .$$

$$y^*(x) = a x + b,$$

(\*)



. 3

$$\begin{cases} [y_i - (ax_i + b)]x_i = 0 \\ [y_i - (ax_i + b)] = 0 \end{cases},$$

:

$$a = \frac{N \cdot \sum(x_i y_i) - \sum(x_i) \sum y_i}{N \cdot \sum x_i^2 - (\sum x_i)^2};$$

$$b = \frac{\sum x_i^2 \sum y_i - \sum x_i \sum(x_i y_i)}{N \cdot \sum x_i^2 - (\sum x_i)^2}$$

:

$$y - \bar{y} = r \cdot \frac{St_y}{St_x} \cdot (x - \bar{x}),$$

$$\frac{\bar{x} - \bar{y}}{St_x - St_y} = \frac{x - y}{( ) x - y} ;$$

;  $r =$  , -

:

$$r = \frac{\overline{x \cdot y} - \bar{x} \cdot \bar{y}}{St_x \cdot St_y}.$$

$r,$

$-1 \quad +1,$

$x \quad y \cdot \quad r = 0,$

$x \quad y \quad ,$

$\cdot \quad r = \pm 1 \quad \cdot \quad , \quad |r|,$

$x \quad y \quad -$

( , -

$|r|/t_2, \quad t_2 = (1 - r^2)/\sqrt{N} -$

$r \cdot$

$|r|/t_2 \quad t, \quad \{ \quad N \cdot$

(  $N \geq 50$ ) (

0,999),  $|r|/t_2 \geq 3 \cdot N$  -

$t(\xi, N).$

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2.

3.

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