SURFACE TENSION

Name: ....

Group: ....

Date: ....

1. Goal of the experiment: ....

....

A. THE STALAGMOMETER METHOD

Results of measurements of number of drops flowing out from stalagmometer capillary:

	water n_0	examined liquid ...., n
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
mean value		

temperature of liquids: …………………………………

density of water: density of the examined liquid:

$d_0 \pm \Delta d_0 =$ .... $d \pm \Delta d =$ ....

mean number of drops:

$\bar{n}_0 =$ .... $\bar{n} =$ ....

standard deviation of the mean:

$s_{\bar{n}_0} =$ .... $s_{\bar{n}} = =$ ....

maximum error of the mean value:

$\Delta \bar{n}_0 =$ .... $\Delta \bar{n} =$ ....

relative surface tension: $\dfrac{\sigma}{\sigma_0} \pm \Delta\left(\dfrac{\sigma}{\sigma_0}\right) =$ ....

B. THE CAPILLARY METHOD

	density of liquid $d \pm \Delta d$	capillary radius $r \pm \Delta r$	height of the column of liquid $h \pm \Delta h$	surface tension σ	mean value $\bar{\sigma}$
water					
examined liquid:					

The Estimation of error of measurement of surface tension for the capillary of the greatest diameter:

a) for water: $\qquad \Delta\sigma_0 =$ ……………………….....................

$\qquad\qquad\qquad\qquad \sigma_0 \pm \Delta\sigma_0 =$ ……................................

b) for examined liquid: $\quad \Delta\sigma =$ ……….................................

$\qquad\qquad\qquad\qquad \sigma \pm \Delta\sigma =$ ....

$\qquad\qquad$ relative surface tension: $\dfrac{\sigma}{\sigma_0} \pm \Delta\left(\dfrac{\sigma}{\sigma_0}\right) =$ ....

Conclusions: ....

....

....

....

....

....

....

....

....

....

....

....

Name: ....

Group: ....

Date: ....

1. Goal of the experiment: ....

   ....

2. Results of measurements of the monomolecular layer diameter d_L:

		1	2	3	4	5	6	7	8	9	10
d_L	.... unit										

a) mean value of the monomolecular layer diameter:

   $\overline{d}_L = $ ....

b) standard deviation of the mean value:

   $s_{\overline{d}_L} = $ ....

c) maximum error of the mean value:

   $\Delta \overline{d}_L = $ ....

   Diameter of the monomolecular layer:

   $\overline{d}_L \pm \Delta \overline{d}_L = $ ....

3. Volume V_d of a single drop of the stearic acid solution:

   $V_d \pm \Delta V_d = $ ....

4. Dimensions of the stearic acid molecule:

Physical quantity	unit	value	estimated error
Mass concentration of the solution, c			
Molar mass of the stearic acid, M			
Molar concentration of the solution, c_m			
Density of the stearic acid, ρ_{SA}			
Diameter of the stearic acid molecule, d_m			
Length of the stearic acid molecule, l_m			

Conclusions ....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....