INVESTIGATION OF RHEOLOGICAL MODELS OF NON-STIMULATED MUSCLE STRESS RELAXATION PROCESS

Performed by: …….. Date: .....

Goal of the lab: .....

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1. The coefficient of elasticity of the applied spring - the spring constant k:

   $k \pm \Delta k = (24 \pm 3)$ N/m

2. Position of the indicator when the spring is unstretched – the initial position l_0:

   $l_0 \pm \Delta l_0 =$……..

3. Approximate duration of the stress relaxation process T_p *(the time needed for the indicator to return to a position approximately 5 mm below* l_0 *after the spring has been stretched*):

   $T_p =$…….. ……..

4. Interval of time Δt between subsequent readings of the indicator position (*rounded to the nearest whole second*):

   $\Delta t = \frac{T_p}{9} =$ ……..

5. Readings of the indicator position l_i during the stress relaxation process.

   Stretch the spring, release it and read off the indicator position every estimated interval of time Δt

No.	time	position of the indicator l_i				actual elongation of the spring $\Delta l_i = l_0 - \overline{l_i}$	Force* F_i	$\ln(F_i)$
		1st trial	2nd trial	3rd trial	$\overline{l_i}$			
	[s]	[cm]				[m]		
1	0							
2								
3								
4								
5								
6								
7								
8								
9								
10								

*$F_i =$ ……
$formula$

5. Plot the graphs: $F = f(t)$ and $\ln(F) = f(t)$.

6. The stress relaxation time τ determined from the graph $F = f(t)$:

   $\tau =$ ……..

7. The stress relaxation time τ determined from the graph $\ln(F) = f(t)$:

   The slope of the trend line: a = ……..

   The stress relaxation time τ calculated on the basis of the slope:

   $\tau =$ ……..

8. Conclusions*:* ……