22 Celsius degree. Oct 29 Wednesday.

Lab A Viscosity

Exp 1

Table 1. Inner Diameter of the glass cylinder

	Measurement # (mm)
D0 (zero error)	0.00
D1	78.02
D2	78.60
D3	78.00
D4	78.04
D5	78.00
D6	78.00

D_avg = sum_i=1^6 Di / 6 = 78.11 mm

Table 2. Diameter of the steel ball

	Measurement # (mm)					
			0.9 mm		1.2 mm	
	ball1	*ball2*	*ball3*	*ball4*	*ball5*	*ball6*
*d*0 (zero error)	0.000					
*d*1	0.880	0.852	0.910	0.882	0.892	0.890
*d*2	0.890	0.909	0.900	0.900	0.900	0.900
d3	0.900	0.900	0.892	0.890	0.890	0.910
d4	0.910	0.910	0.890	0.880	0.910	0.892
d5	0.920	0.900	0.900	0.892	0.900	0.902
d6	0.900	0.890	0.910	0.890	0.912	0.890

Room temperature: T = 22.0 ± 0.2 °C
ρ(T) = 974 - 0.614 * T = 960.47 kg/m^3
D0 = 78.11 ± 0.02 mm , h = 200.3 ± 1.0 mm
ρ0 = (7.80 ± 0.05) × 10^3 kg/m3

Table 3. Travel time and velocity of the ball and the viscosity of castor oil

		0.9 mm 1.2 mm		
	t(s)	*t_avg (s)*	*v(m/s) = h/t*	η (Pa·s)
ball1	62.97			
ball2	60.63			
ball3	60.66	60.88	3.29*10^-3	0.92
ball4	61.35			
ball5	60.84			
ball6	58.81			

Exp 2

		☐ Ubbelohde viscometer ☑ Cannon-Fenske viscometer	Note
T (℃)		22.0	To measure
Water	ρ_s (kg/m^3)		Appendix A (after lab)
	η_s (Pa·s)		Equation 23 (after lab)
	ν_s (m^2/s)		Equation 2 (after lab)
	t_s (s)	318.04, 310.22, 300.12, 301.55, 305.11, 302.15	To measure (6 times)
☑ Salt (10% w/v) ☐ Sugar (20% w/v)	Bé (°Bé)	9	To measure
	ρ (kg/m^3)	1064.0423	Equations 21 & 22(after lab)
	t (s)	321.21, 316.22, 330.19, 320.11, 324.35, 330.01	To measure (6 times)
	ν (m^2/s)		Equation 19 or 20 (after lab)
	η (Pa·s)		Equation 2 (after lab)

Signature: