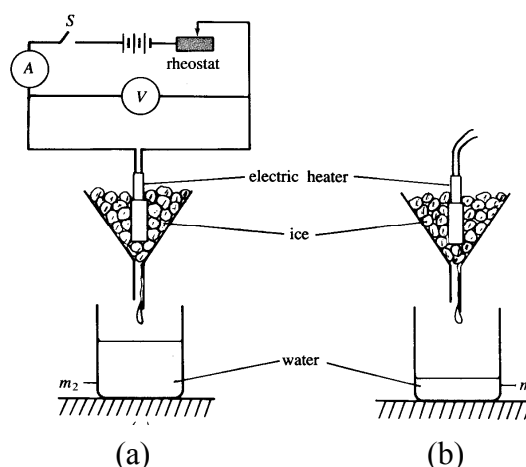


Lesson 13:3B

(Please read the text, listen to the explanation and try the question given. It will be discussed in the class)

b. specific latent heat of fusion of ice

1. An electrical heater is placed in a funnel containing ice. The rheostat is adjusted when necessary to maintain a constant current.
2. At the instant the switch S is closed, a beaker is placed below to collect the water from the melting ice.
3. After a measured time t , the beaker is removed from below funnel and the mass m_2 of the water collected is measured.
4. To take into consideration the mass of ice melted due to the heat gained from the surroundings, the same amount of ice is placed in another funnel containing an electric heater which is not connected to the circuit, as shown in diagram (b).
5. The mass m_1 of ice melted after the same measured time t is obtained by collecting the water with a beaker.
6. Therefore, the mass of melted ice by electric heater = $m_2 - m_1$



Electrical energy released by the heater = latent heat absorbed to melt the ice

$$I V t = (m_2 - m_1) l_f \quad \text{--- (8)}$$

I : current

V : p.d. across heater

l_f : specific latent heat of fusion of a ice

Q5: Some crushed ice at 0°C is placed in a funnel together with an electric heater. As the ice melts, the mass of water collected in the beaker, in a measured time interval, with the heater switched off and on. The data are shown below:

	mass of water / g	energy supplied to heater / J	time interval / min
heater switched off	25.7	0	10
heater switched on	71.3	15 000	5

Calculate a value for the specific latent heat of fusion of ice.