

Thermal Behavior, Crystallization Kinetics, and Morphology of PBT/MWCNT Composites: A Combined DSC and Hot-Stage POM Study

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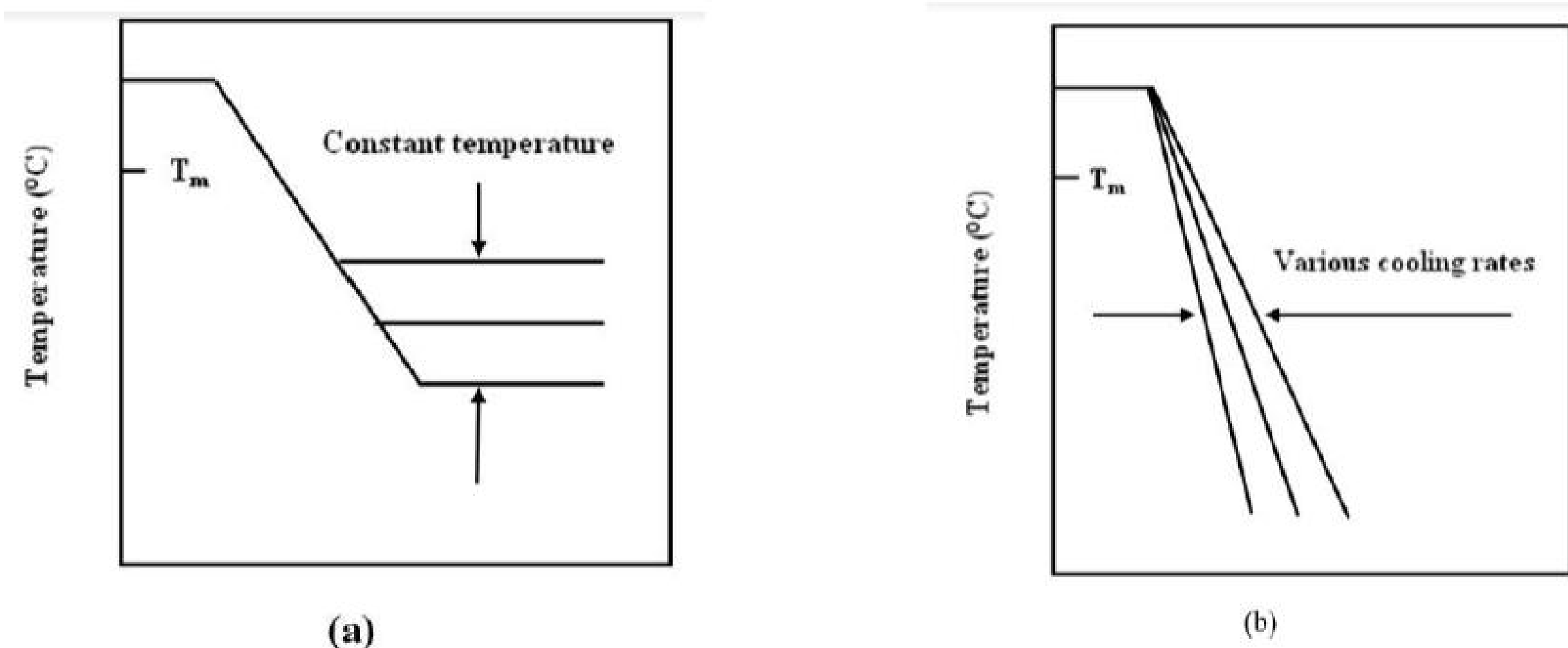
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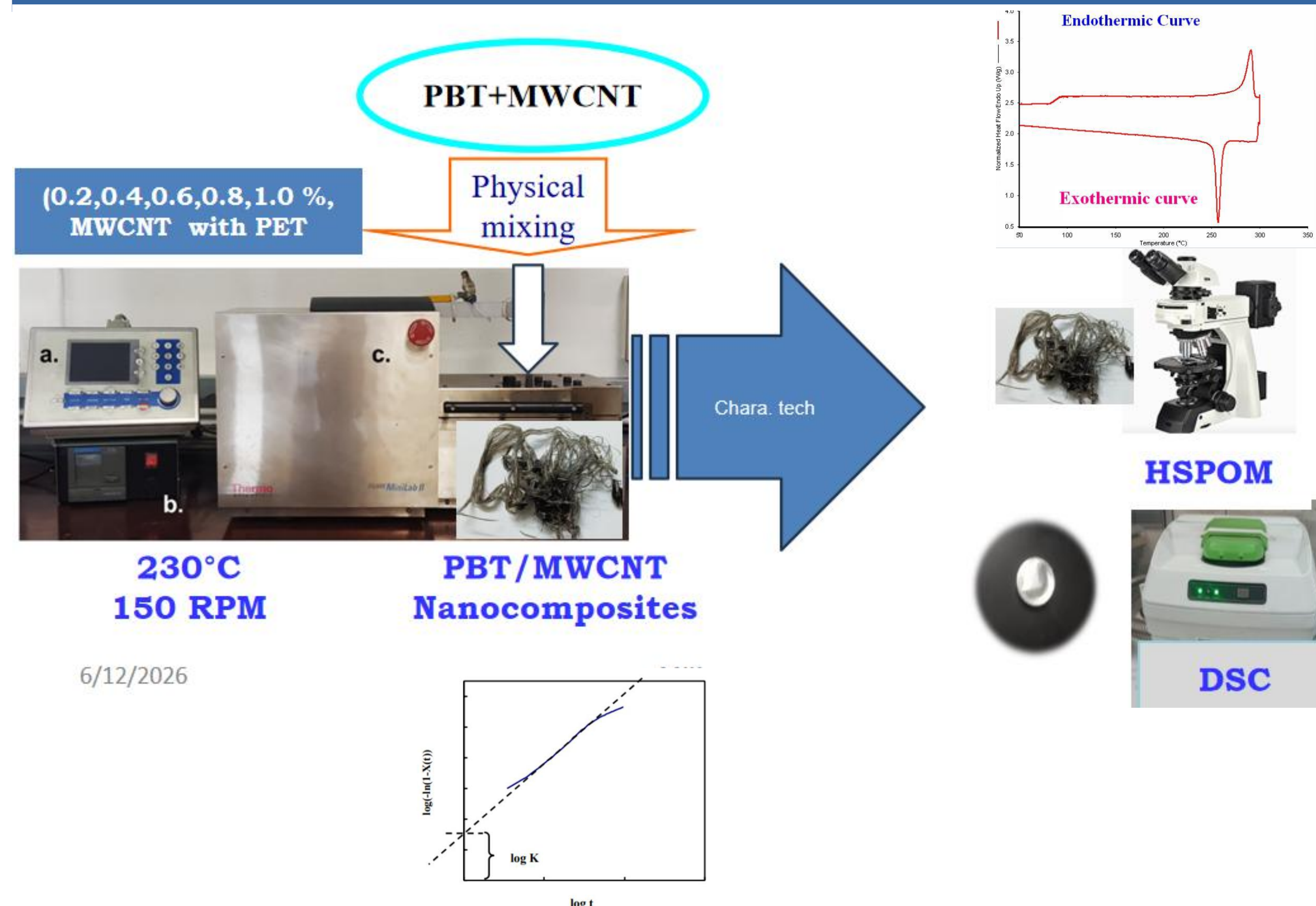
INTRODUCTION & AIM



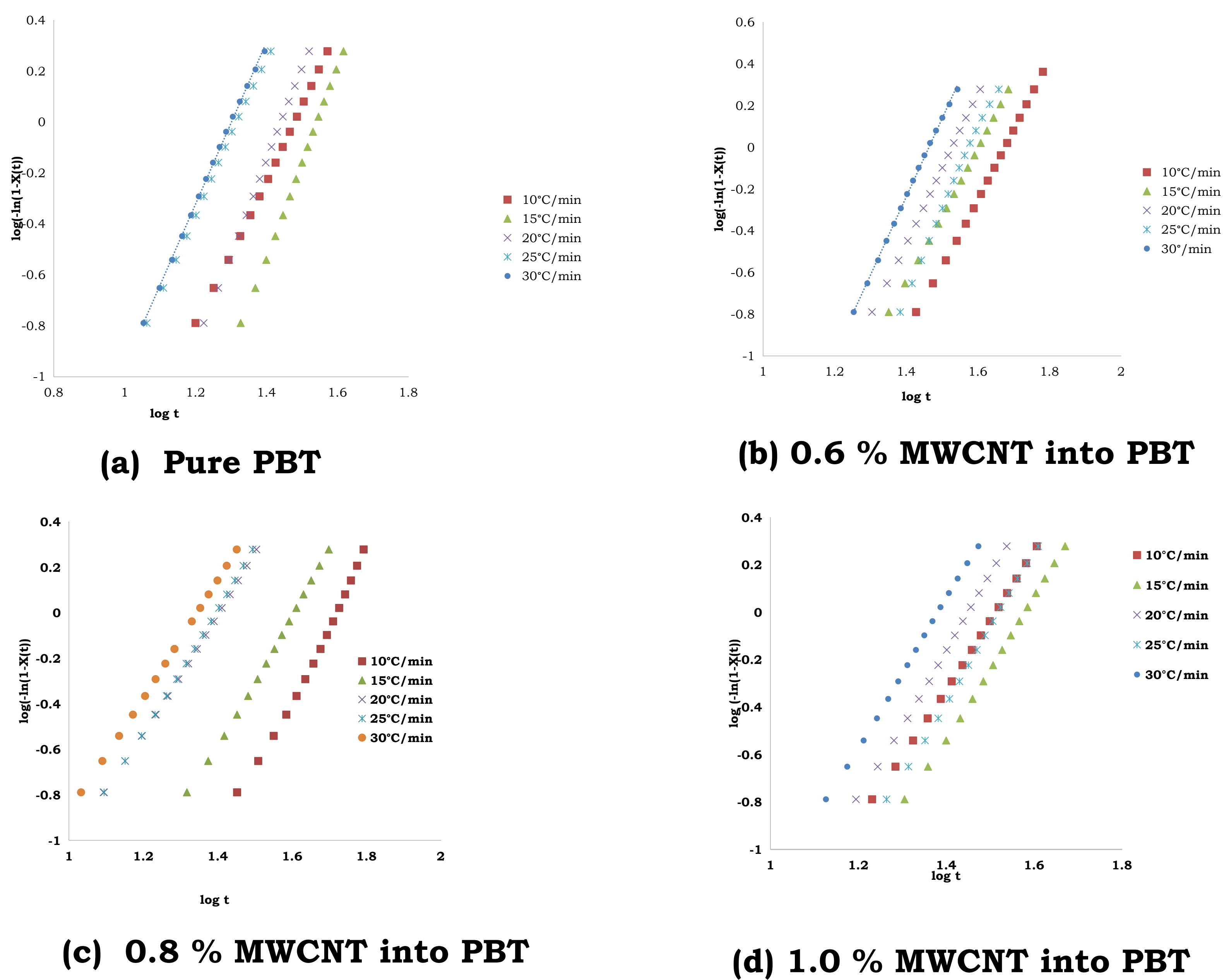
Schematic representation of crystallization process:
(a) Isothermal and (b) nonisothermal with constant cooling rate.

- To find kinetic parameters using Avrami model.
- To study structural analysis of hot stage optical microscopy.

METHOD

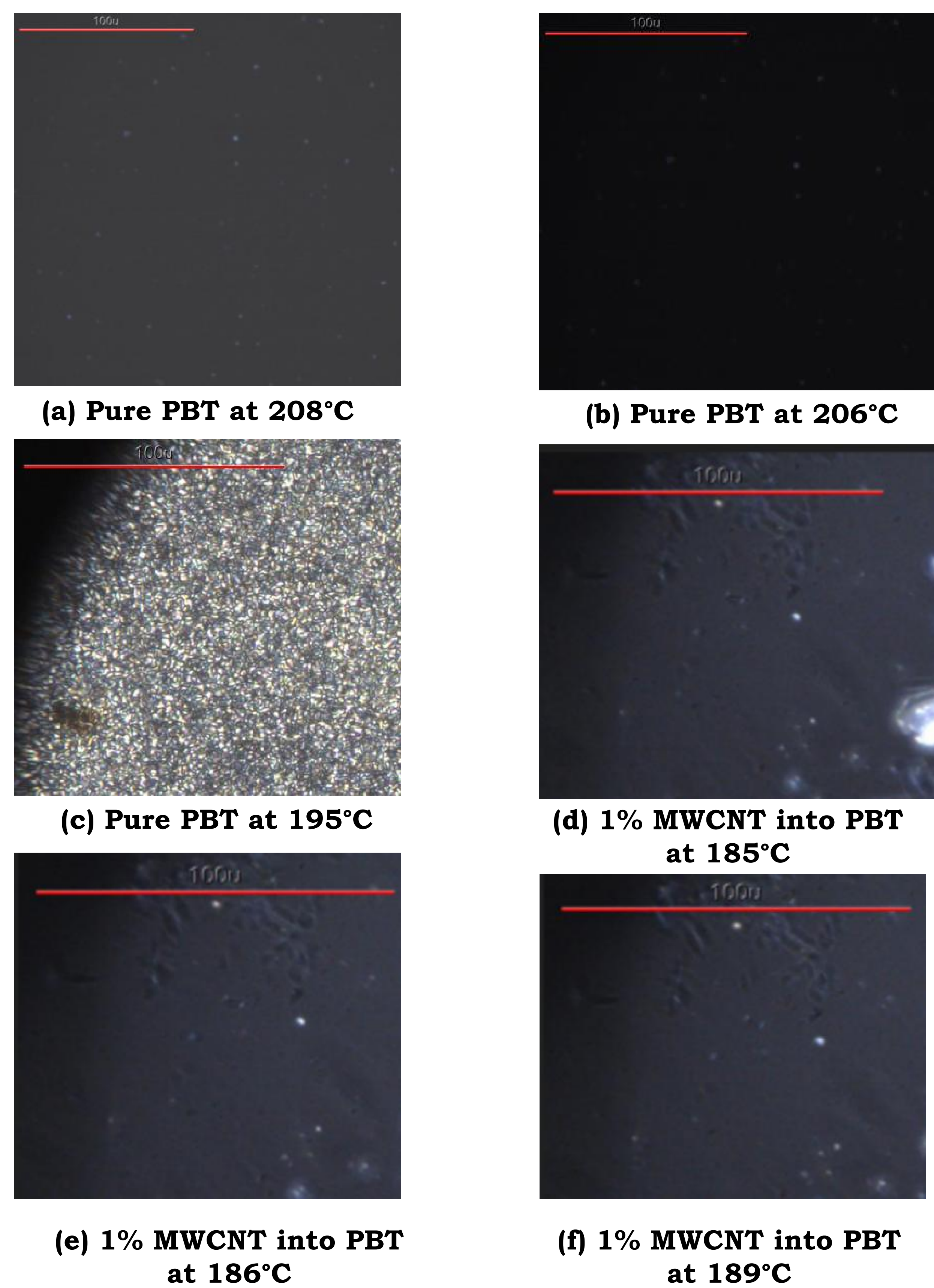


RESULTS & DISCUSSION



Rate of cooling (°C/min)	Pure PBT	0.6% MWCNT into PBT	0.8% MWCNT into PBT	1 % MWCNT into PBT
10	3.3	2.9	3.2	2.9
20	3.6	3.7	2.6	3.2
30	3.8	3.2	2.6	3.1

Avrami constant (n)



Hot stage polarized optical micrographs of PBT/MWCNT

CONCLUSIONS

- The nonisothermal melt crystallization exothermic peak temperature of PBT and PBT/MWCNT nanocomposites was found to shift to lower temperatures when the cooling rates were increased.
- The values of the rate parameters for these polyesters were all found to increase with decreasing temperature (or with increasing degree of undercooling).

REFERENCES

- Arun K. Kalkar, Vineeta D. Deshpande ; Milind J. Kulkarni Polymer Engineering and Science, Volume 49, (p 397 - 417), 2009.
- Arun K. Kalkar, Vineeta D. Deshpande ; Milind J. Kulkarni Journal of Polymer Science: Part B: Polymer Physics, Vol. 48, 1070-1100 (2010).