**Supplementary Materials:**

# Non-isothermal crystallization behavior of PEEK/Graphene nanoplatelets composites from melt and glass states

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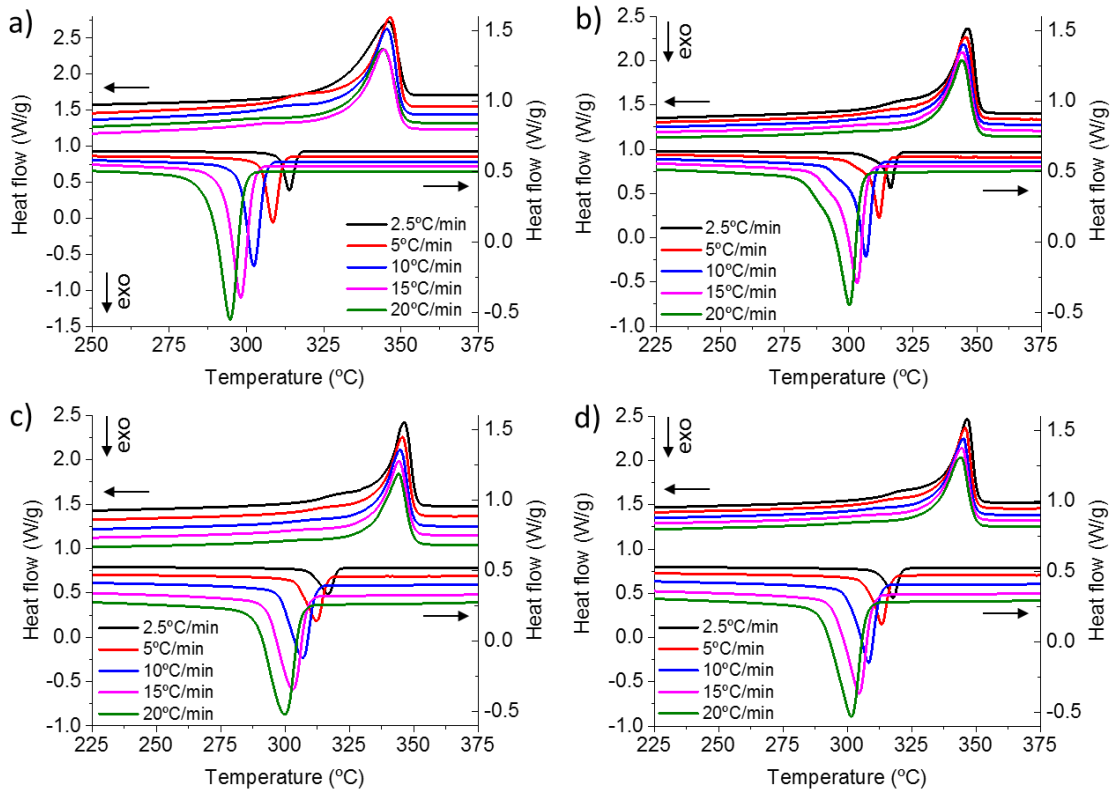


***Figure S1.*** DSC thermographs during heating and cooling of a) neat PEEK, b) PEEK/GNP (1wt.%), c) PEEK/GNP (5wt.%) and d) PEEK/GNP (10wt.%).

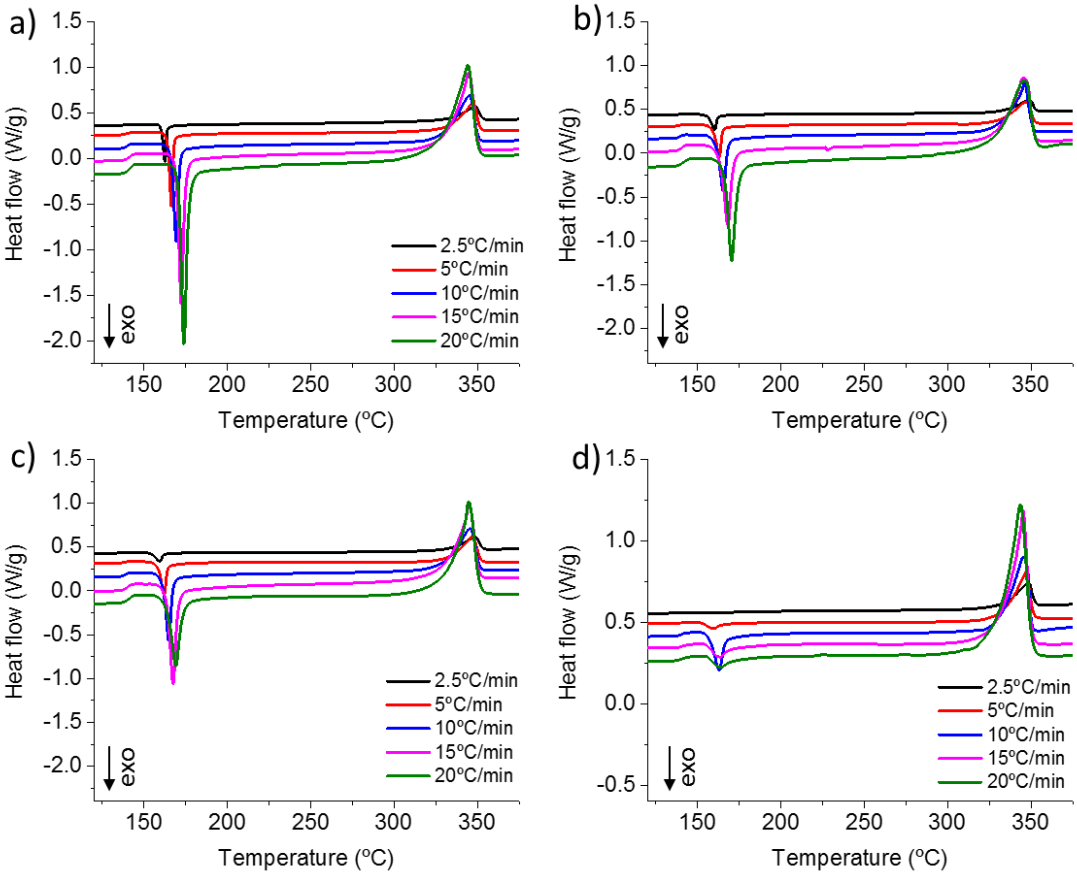


***Figure S2.*** DSC thermographs during heating of amorphous samples a) neat PEEK, b) PEEK/GNP (1wt.%), c) PEEK/GNP (5wt.%) and d) PEEK/GNP (10wt.%).

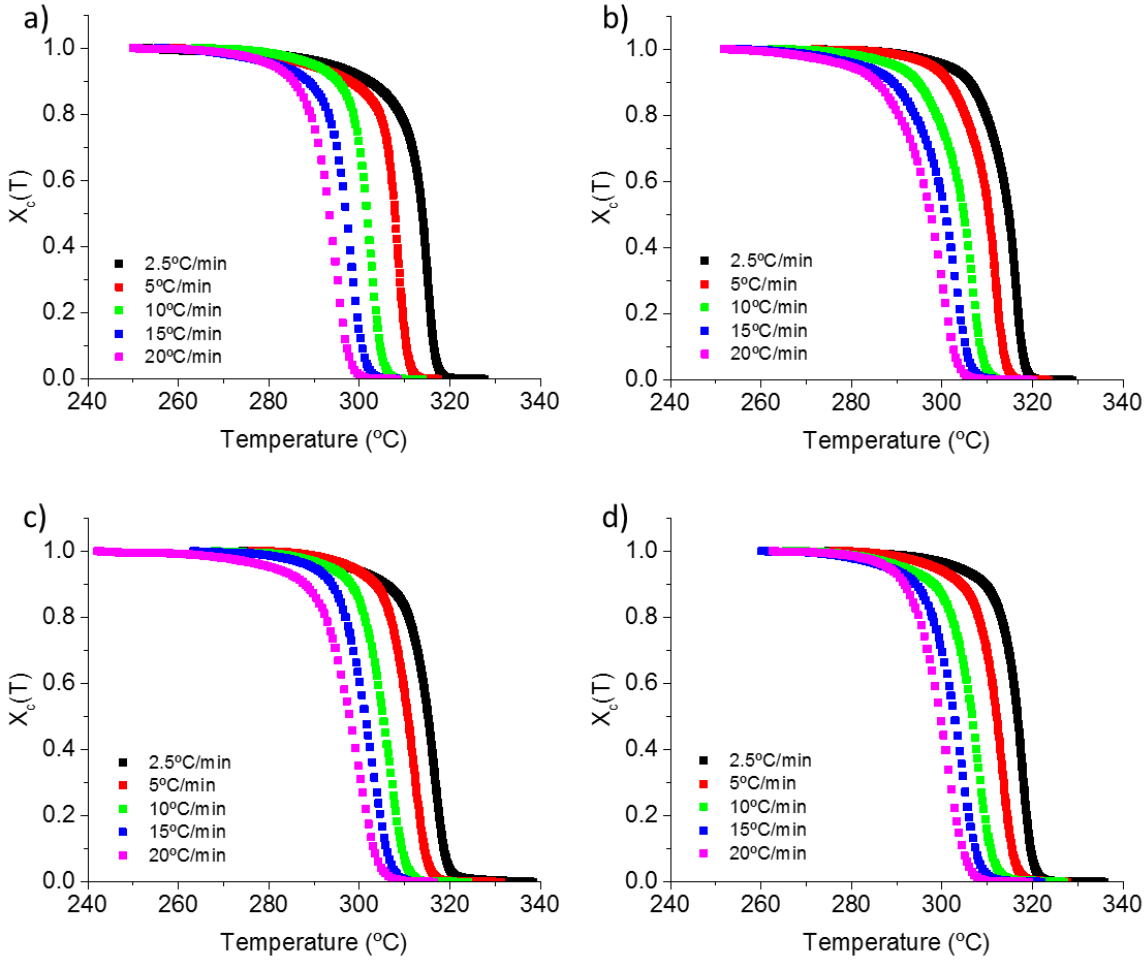


***Figure S3.*** Relative crystallinity against temperature for all samples: a) neat PEEK, b) PEEK/GNP (1wt.%), c) PEEK/GNP (5wt.%) and d) PEEK/GNP (10wt.%).

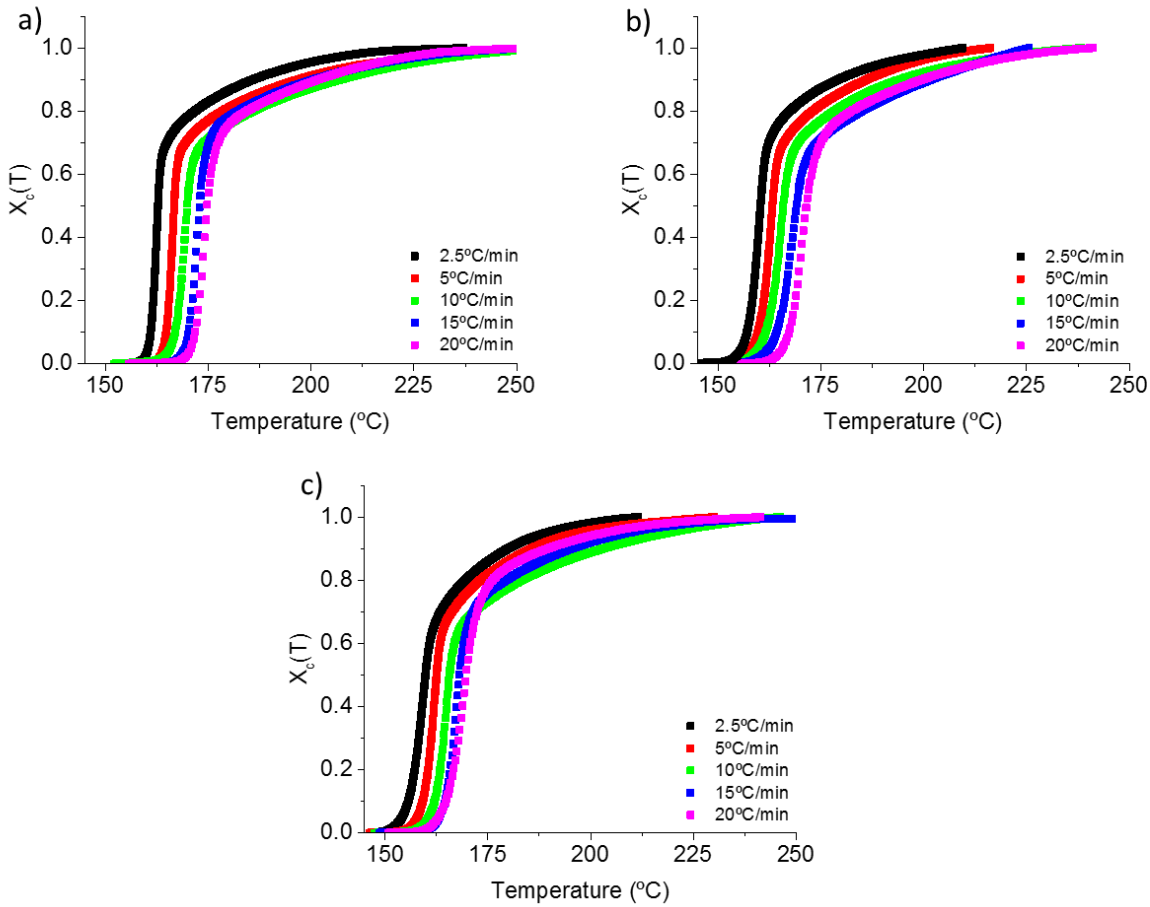


***Figure S4.*** Relative crystallinity against temperature for all the samples crystallized from melt: a) neat PEEK, b) PEEK/GNP (1wt.%) and c) PEEK/GNP (5wt.%).

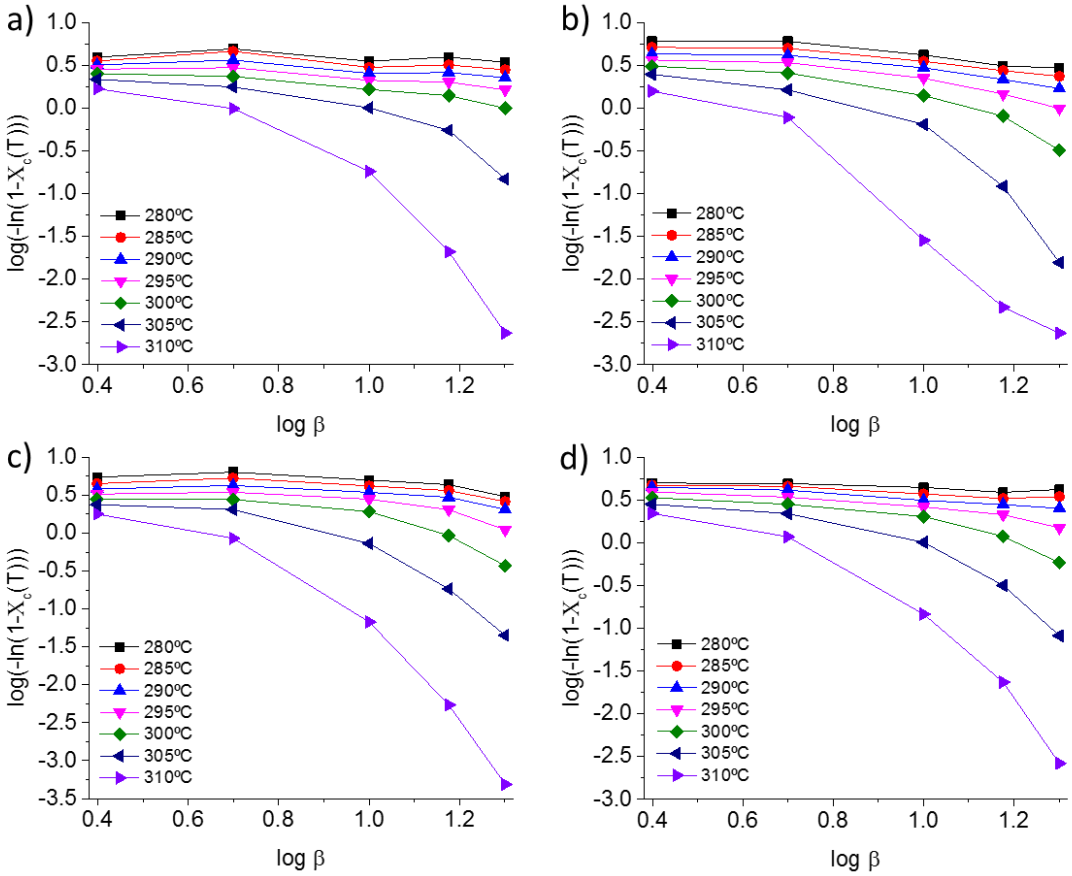


***Figure S5***. Ozawa plots of log (-ln (1-XC (T))) against log β for a) neat PEEK b) PEEK/GNP (1wt.%), c) PEEK/GNP (5wt.%) and d) PEEK/GNP (10wt.%) samples crystallized from melt.

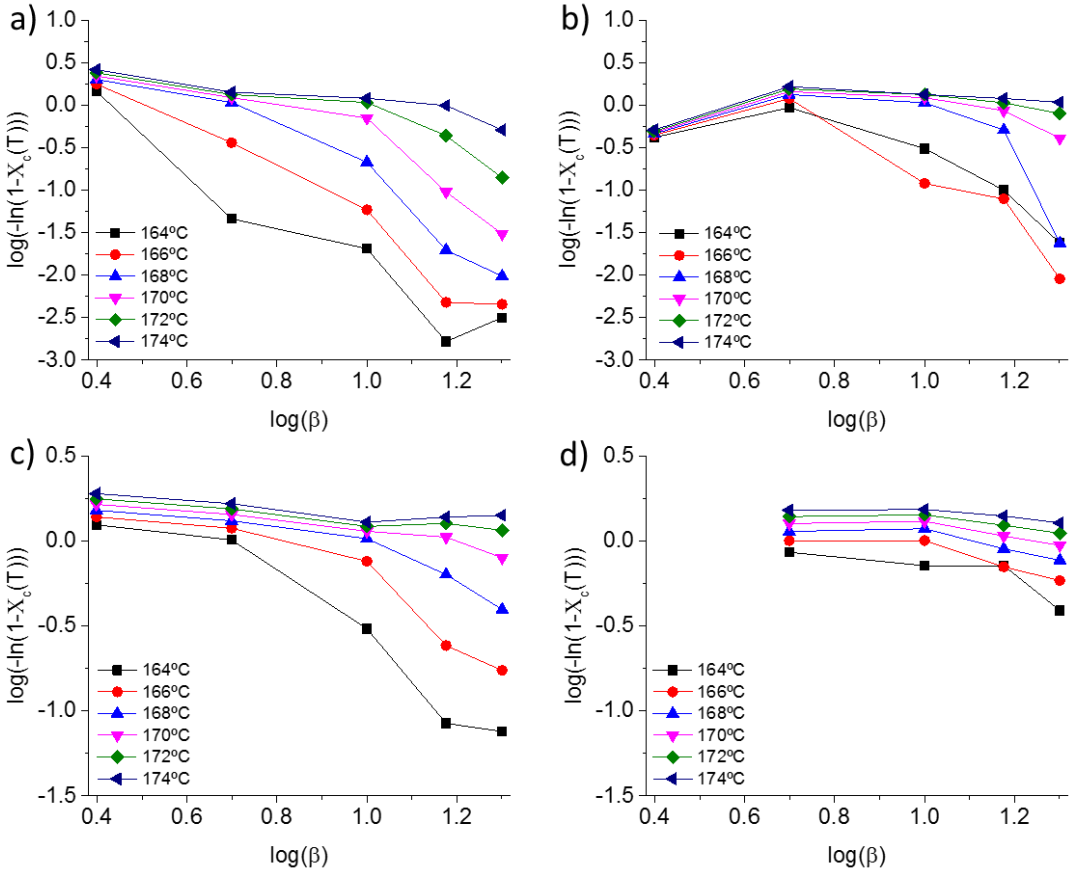


***Figure S6.*** Ozawa plots of log (-ln (1-XC (T))) against log β for a) neat PEEK b) PEEK/GNP (1wt.%), c) PEEK/GNP (5wt.%) and d) PEEK/GNP (10wt.%) samples crystallized from glass.

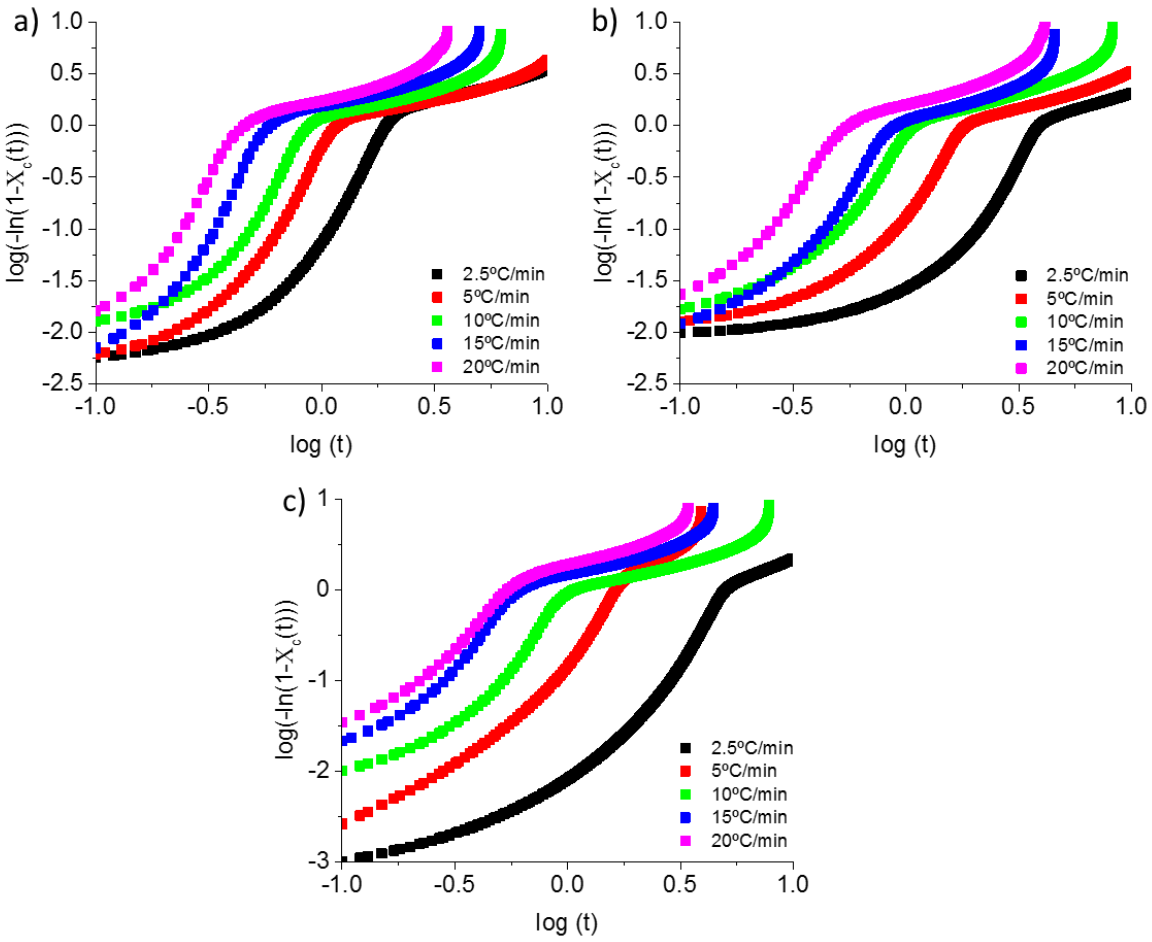


***Figure S7.*** Modified Avrami plots at various heating rates.a) neat PEEK, b) PEEK/GNP (1wt.%) and c) PEEK/GNP (5wt.%).

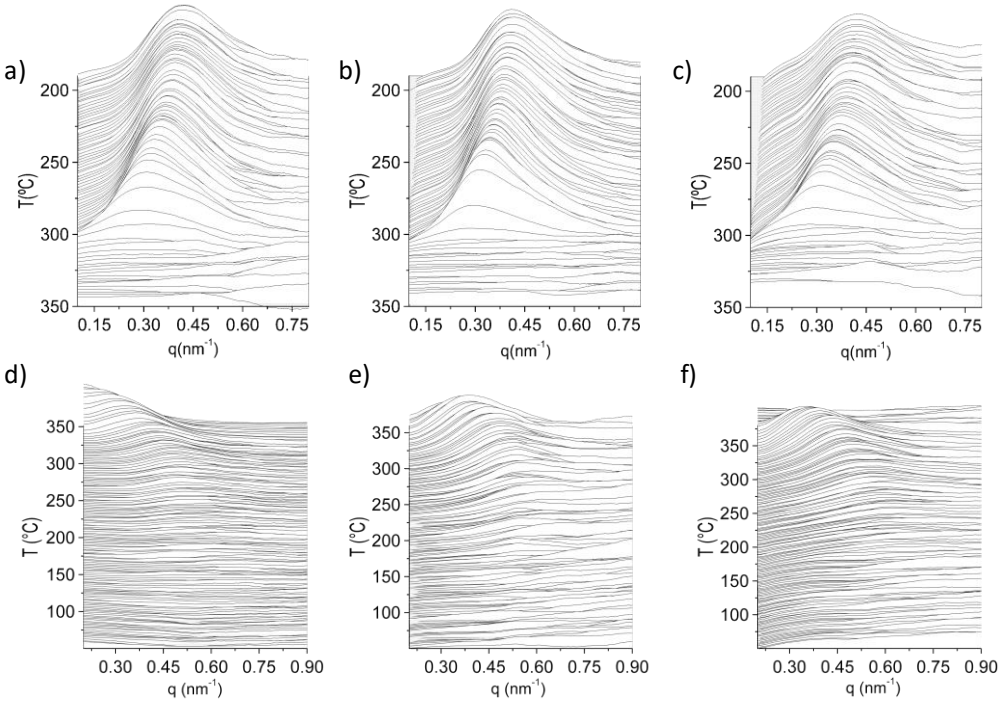


***Figure S*8.** SAXS synchrotron profiles corresponding for a) PEEK/GNP (1wt.%), b) PEEK/GNP (5wt.%), and c) PEEK/GNP (10wt.%) samples crystallized from melt. Samples crystallized from glass: d) PEEK/GNP (1wt.%), e) PEEK/GNP (5wt.%), and f) PEEK/GNP (10wt.%).