Distorted graphene sheet structure-derived latent nanoporosity: Supporting Information

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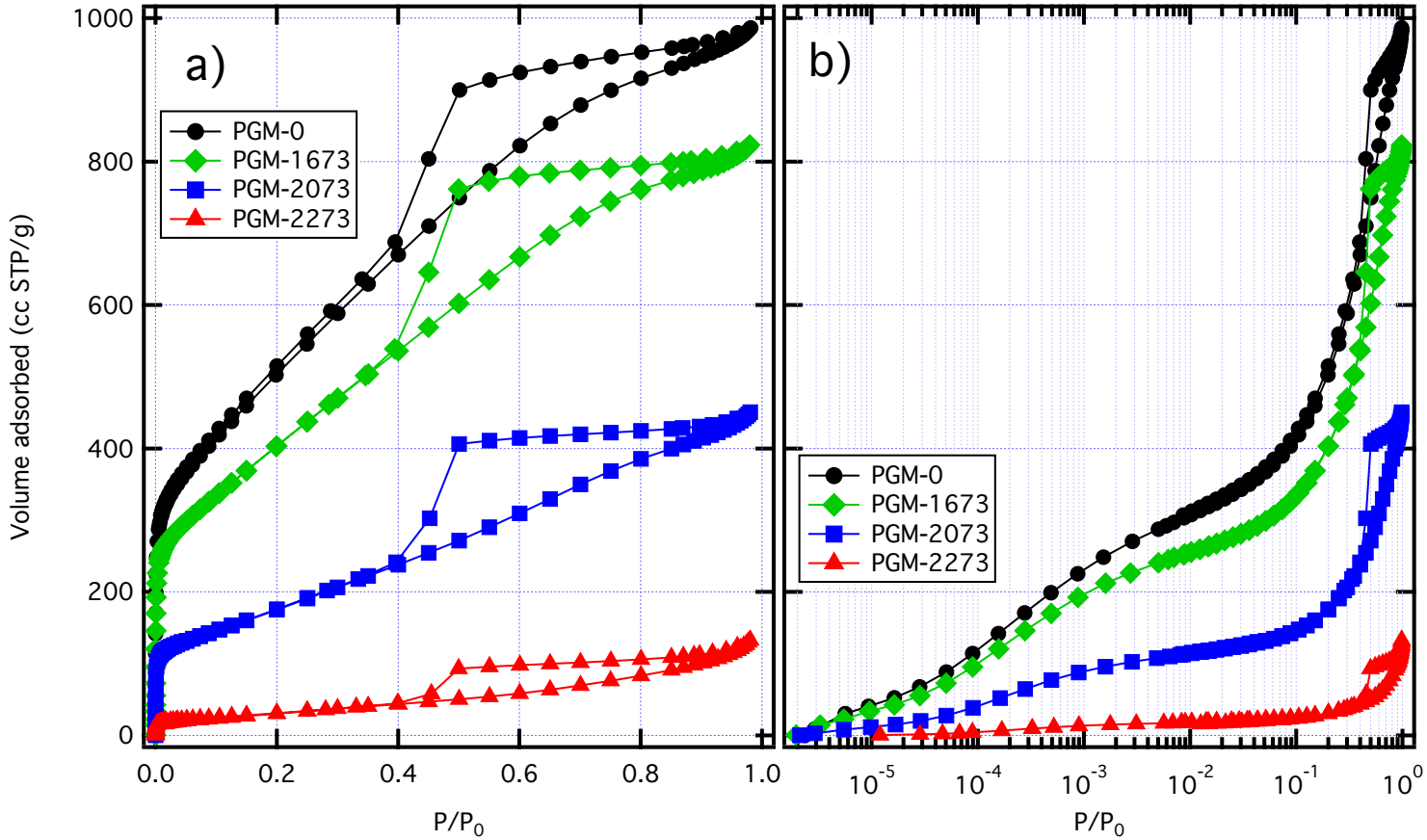

Figure S1. N_2 adsorption isotherms of highly porous graphenes at 77 K . a) Linear scale, b) Semilogarithmic scale.

N_2 adsorption isotherms have feature similar to Ar adsorption isotherms. The adsorption amount ratio of PGM-2273 below $P/P_0 = 10^{-5}$ against the adsorption amount near $P/P_0 = 1.0$ is the largest of all samples. Then, the micropores are more resistive to the stacking than mesopores.

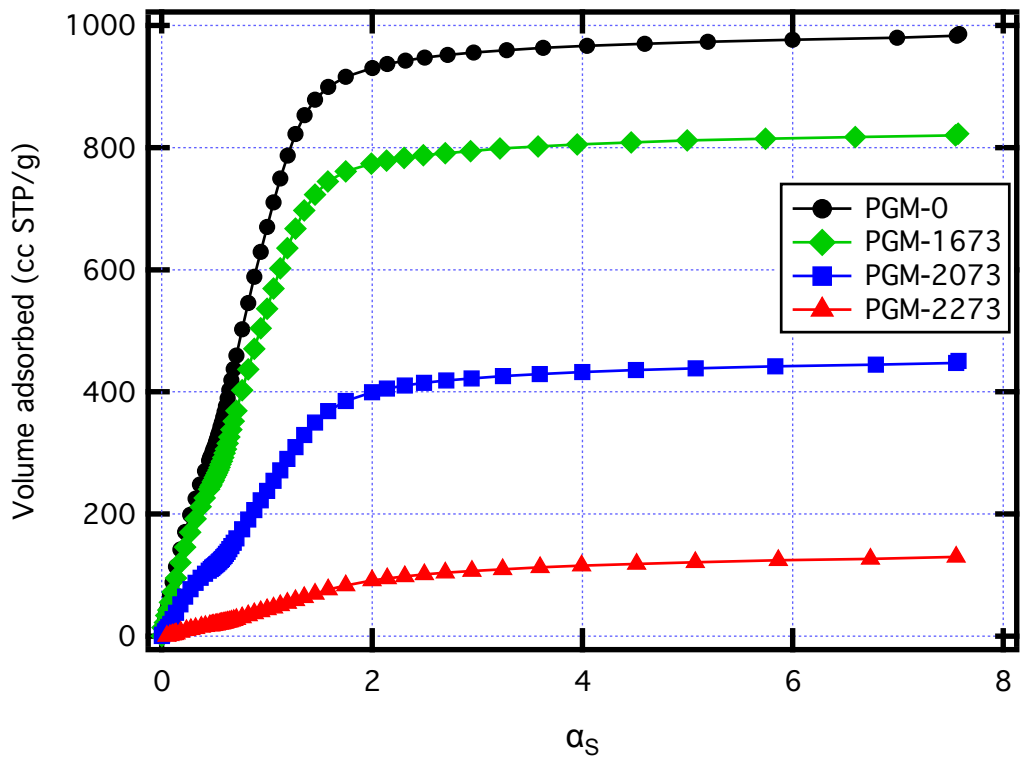

Figure S2. α_S-plots of adsorption isotherms of highly porous graphenes for N_2 at 77 K.

We can observe two upward deviations coming from enhance pore filling in micropores and capillary condensation in mesopores. α_S-plots for N_2 at 77 K are similar to those for Ar. Then, both adsorption data support presence of micropores and mesopores.

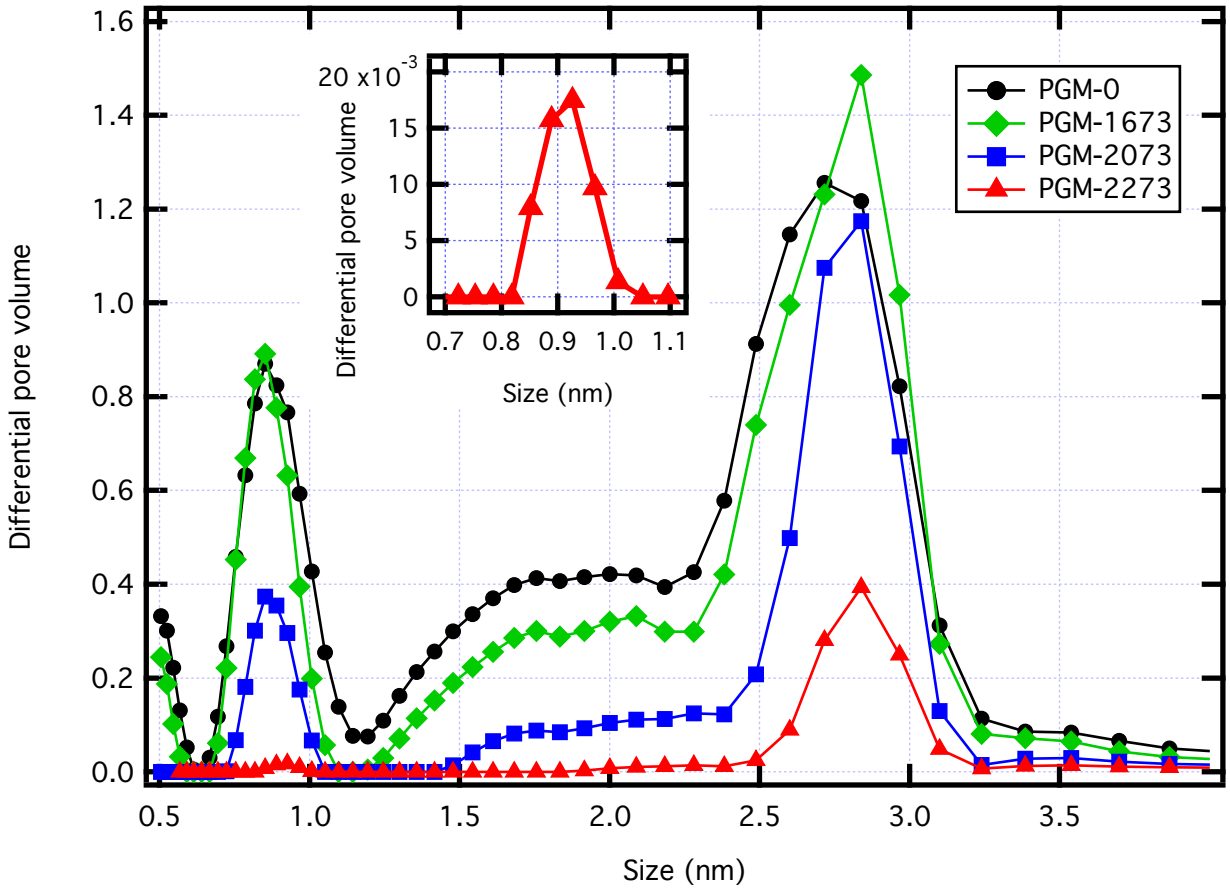

Figure S3. Pore size distributions of PGM samples heated at different temperatures from Ar adsorption isotherms at 87 K using QS-DFT method . The inset shows micropore size distribution of PGM-2273.

The fundamental shape of pore size distribution does not change due to the high temperature treatment. The treatment at a higher temperature collapses both of micropores and mesopores due to a partial stacking of nanographenes.