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Figure S1. (A) GPC traces of $PtBA_{(30K)}$ -Br and $PtBA_{(30K)}$ -b- $PS_{(3K)}$. **(B)** GPC traces of $PtBA_{(30K)}$ -Br and $PtBA_{(30K)}$ -b- $PS_{(10K)}$. **(B)** GPC traces of $PtBA_{(30K)}$ -Br and $PtBA_{(30K)}$ -b- $PS_{(60K)}$. **(B)** GPC traces of $PtBA_{(30K)}$ -Br and $PtBA_{(30K)}$ -b- $PS_{(60K)}$.



Figure S2. CO_2 adsorption capacity tested by TG method of nanoparticles synthesized with different ratio of diblock copolymers to polystyrene or different kinds of diblock copolymers



Figure S3. Change trend of nanoparticles' size: (A) different diblock copolymer. (B) different mass ratio of copolymer to total polymers.



Figure S4. Change trends of CO₂ capture capacities of different AHCPNPs in various synthesis condition.



Figure S5. CO_2 capture capcity of AHCPNPs (synthesized with $PtBA_{(30K)}$ -*b*- $PS_{(30K)}$ and 1:9 mass ratio of copolymer to PS) at 25 °C and 0 °C.