Supplementary Information

High-efficiency Radon Adsorption by Nickel Nanoparticles Supported on Activated Carbon

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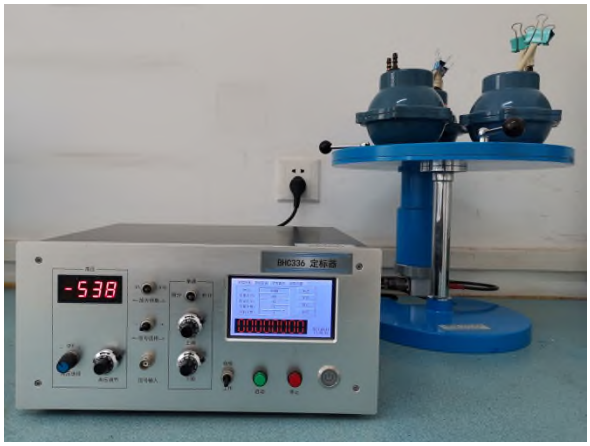

Fig. S1. Adsorption test instruments.

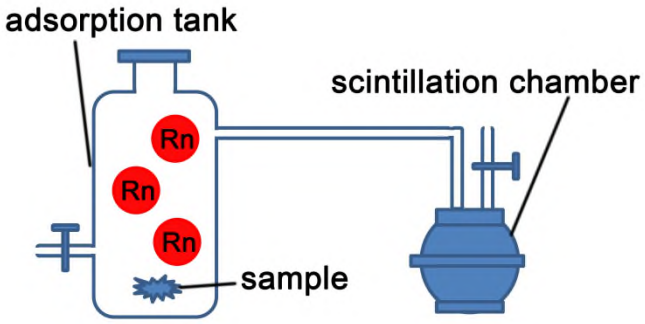

Fig. S2. Adsorption test diagram

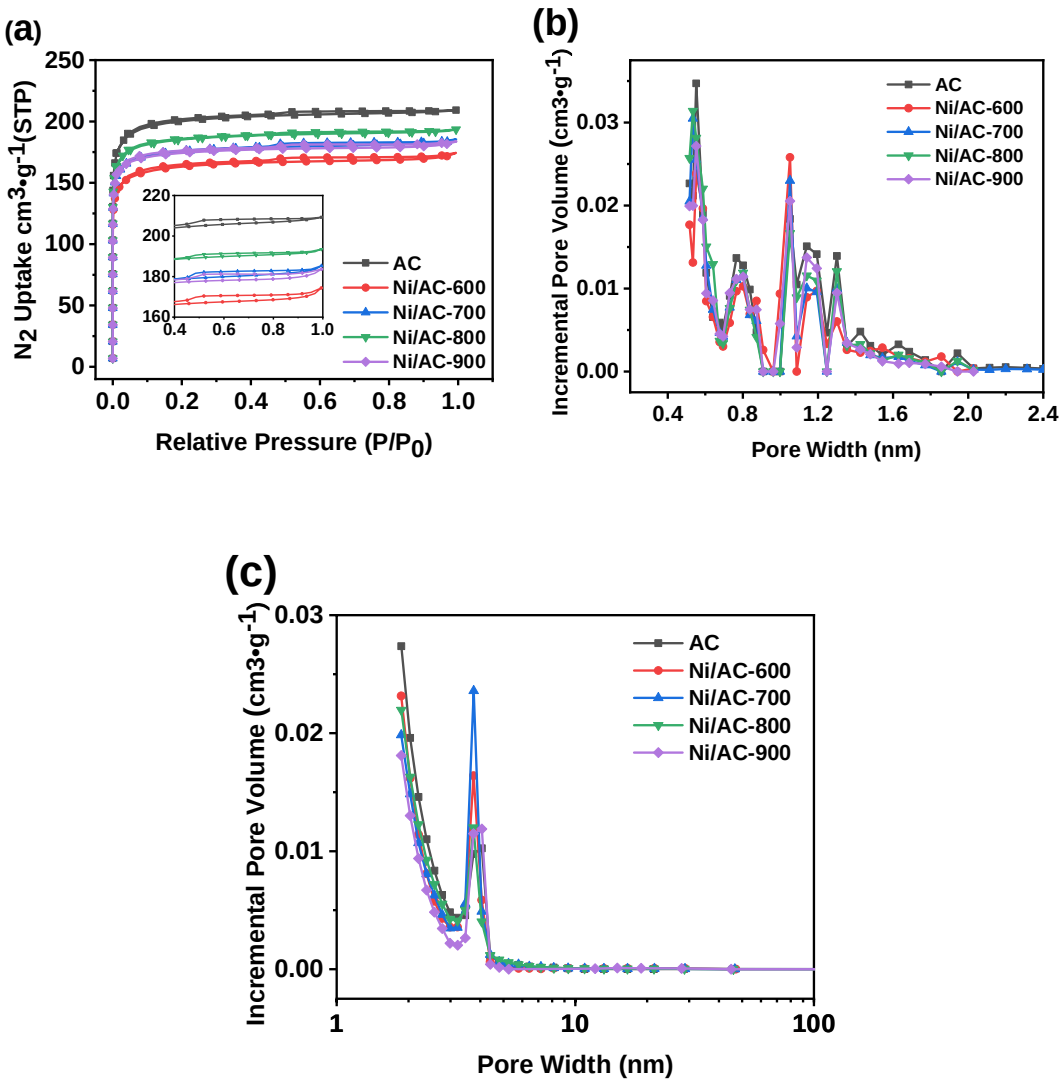

Fig. S3. (a) N_2 adsorption-desorption isotherms; (b) Micropore distribution; (c) Mesopore distribution.

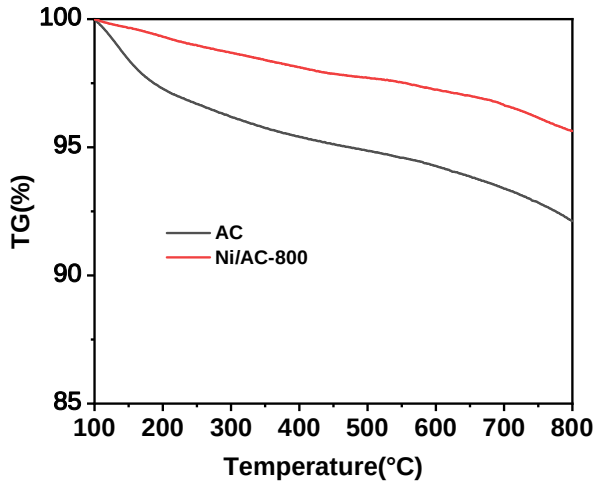

Fig. S4. TG curves of Ni/AC-800 and AC.

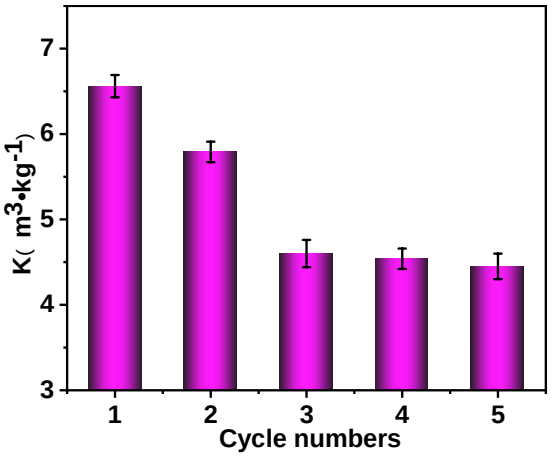

Fig. S5. Rn absorption of samples heated and regenerated in air.

Table S1.

Structural parameters of all obtained samples.

Samples	BET surface area ($m^2 \cdot g^{-1}$)	Area of micropore ($m^2 \cdot g^{-1}$)	Total pore volume($cm^3 \cdot g^{-1}$)	Micropore volume($cm^3 \cdot g^{-1}$)	S_{micro}/S_{BET} (%)
AC	662.45	572.96	0.324	0.270	83.33
Ni/AC-600	541.22	464.72	0.270	0.218	80.74
Ni/AC-700	579.75	509.72	0.287	0.240	83.62
Ni/AC-800	611.50	536.75	0.300	0.254	84.67
Ni/AC-900	575.64	512.82	0.284	0.242	85.21

Table S2.

Rn adsorption properties of samples at different temperatures.

Test temperature (°C)	Adsorption coefficient ($m^3 \cdot kg^{-1}$)				
	AC	Ni/AC-600	Ni/AC-700	Ni/AC-800	Ni/AC-900
20	5.39±0.11	6.61±0.15	7.03±0.11	8.01±0.13	7.26±0.13
25	4.43±0.13	5.42±0.13	5.77±0.10	6.56±0.14	5.97±0.12
30	3.36±0.10	4.35±0.13	5.01±0.13	5.49±0.10	5.25±0.15

Table S3.

Analysis of the valence of nickel on the surface of Ni/AC-800 heated at 120°C for 8 h.

Samples	Ni^0 (%)	Ni^{2+} (%)	Ni^{3+} (%)
Ni/AC-800	27.0	59.5	13.5
Ni/AC-800-1*	20.9	57.6	21.5

*Ni/AC-800-1 heated and regenerated in air