

SUPPORTING INFORMATION

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Table S1. Textural properties of the support and the impregnated samples calculated from the N₂ adsorption data.

Sample	S _{BET} (m ² /g)*	V ₀ (cm ³ /g)*	V _{meso} (cm ³ /g)*	V _t (cm ³ /g)	Estimated NaOH content**
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RG	1426	0.47	0.71	1.18	----
RG-NaOH-10	1394	0.46	0.68	1.14	3.7
RG-NaOH-15	1369	0.45	0.68	1.13	4.8
RG-NaOH-20	1359	0.45	0.66	1.11	5.3
RG-NaOH-30	1289	0.43	0.63	1.06	9.2
RG-NaOH-40	1138	0.38	0.55	0.93	13.4

* Apparent surface area (S_{BET}) obtained after applying the BET equation to the nitrogen adsorption data; micropore volume (V_0) obtained from the Dubinin-Radushkevich equation; mesopore volume (V_{meso}) obtained by the difference between V_t and V_0

**Estimated from the activated carbon weight difference before and after the loading step with NaOH

Table S2. Chemical composition for the different samples evaluated after H₂S experiments deduced from the XPS data.

Sample	Na (at.%)	S (at.%)	O (at.%)	C (at.%)
RG-NaOH-10-af	0.61	8.46	5.47	85.47
RG-NaOH-15-af	0.86	8.86	5.55	84.74
RG-NaOH-20-af	0.76	11.55	5.29	82.41
RG-NaOH-30-af	1.58	18.12	7.48	72.82
RG-NaOH-40-af	2.17	17.46	8.74	71.63

FIGURES

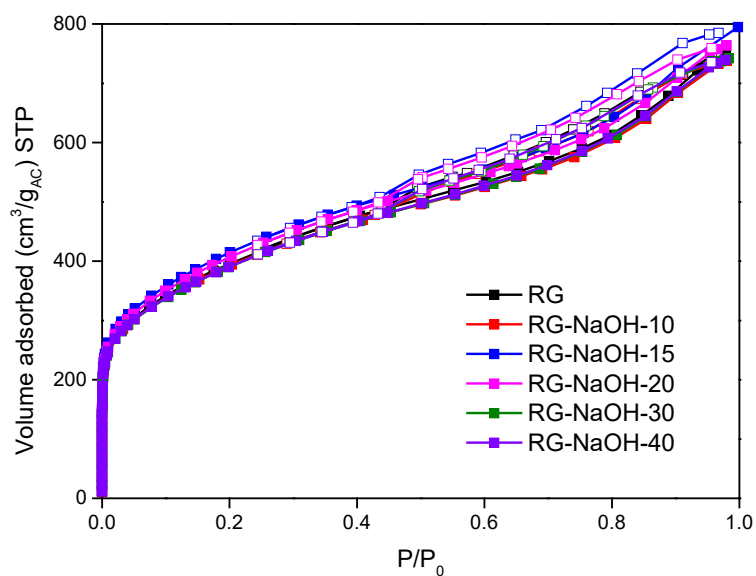


Figure S1. Nitrogen adsorption/desorption isotherms at -195°C taking from Figure 1a, and normalized per gram of activated carbon (using the real amount of NaOH incorporated).

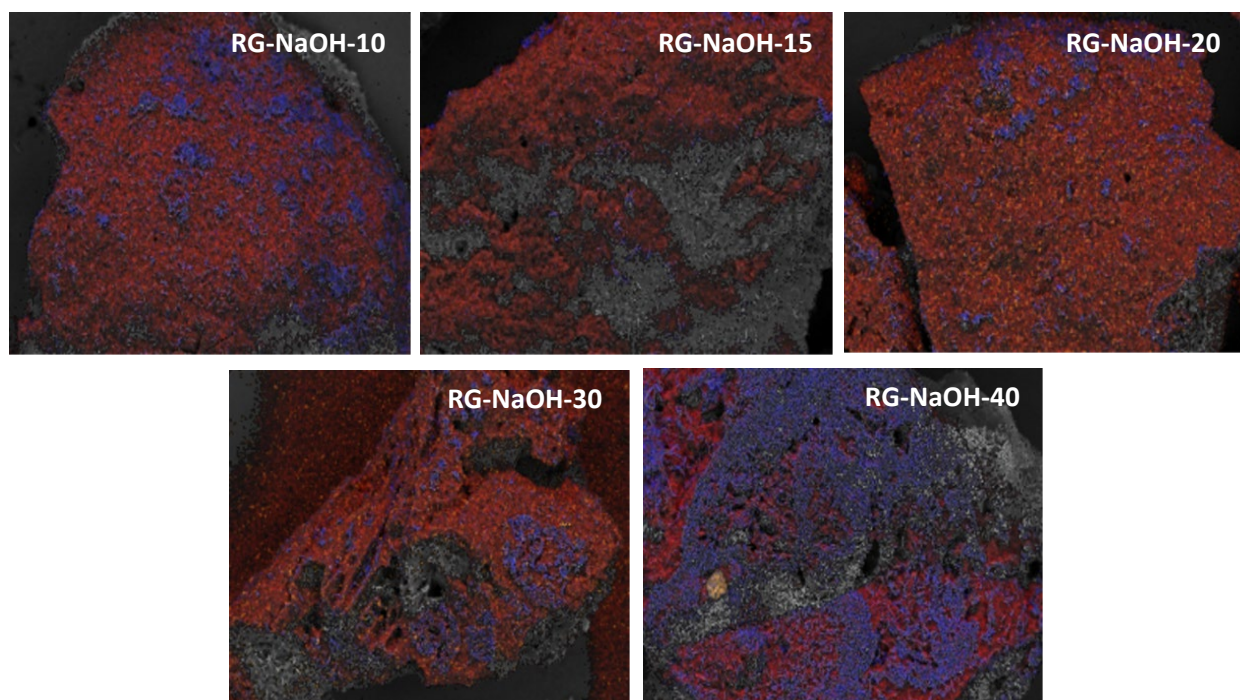


Figure S2. Elemental mapping for C (red), and Na (blue) of the synthesized RG-NaOH-X samples.

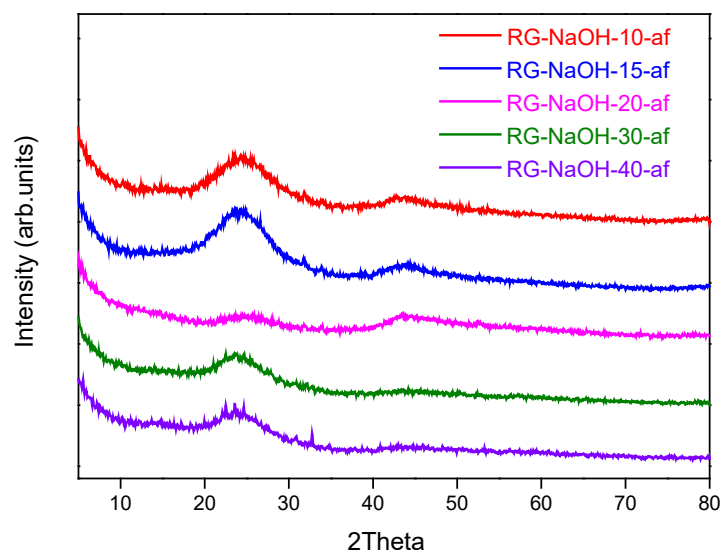


Figure S3. XRD patterns of the different adsorbents after the H₂S removal process.

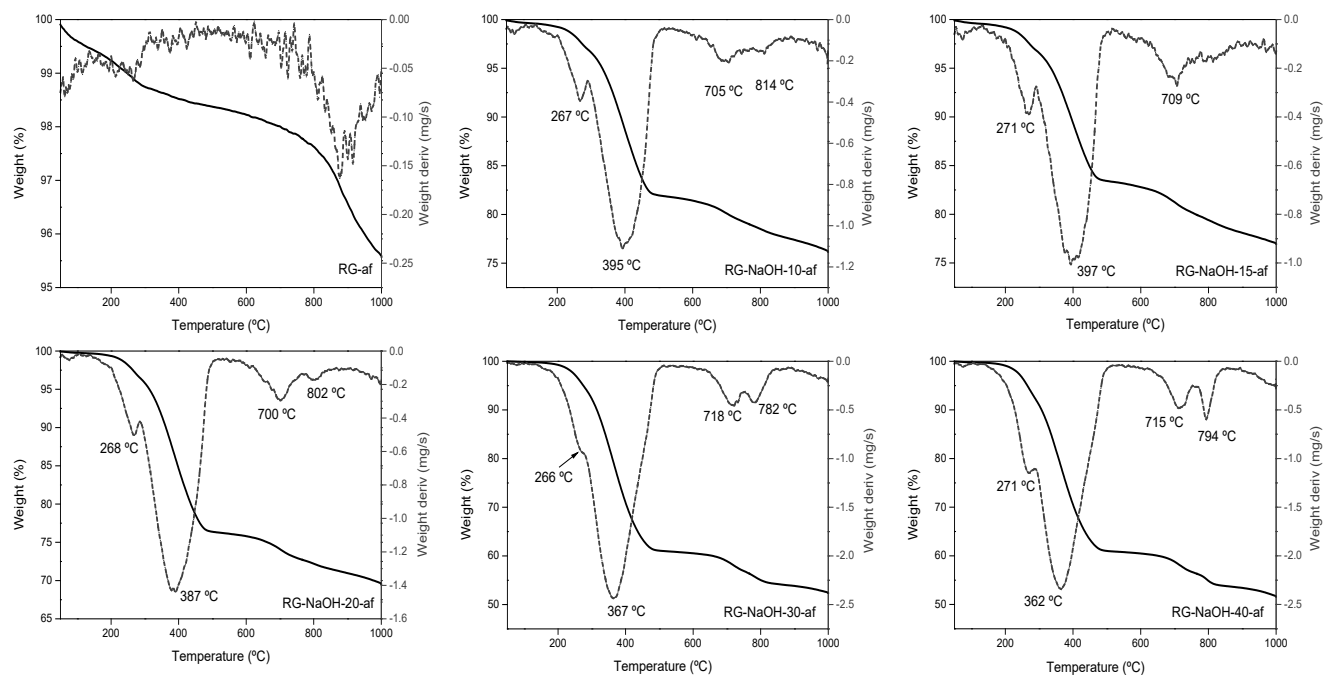


Figure S4. Thermogravimetric analysis of the used adsorbents after the hydrogen sulfide breakthrough tests.