



Article

Green-Extraction of Graphene from Natural Mineral Shungite - Supplementary Material

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X-ray photoelectron spectrometry has also been used to quantify the relative intensity of components associated with C 1s and O 1s. The data is presented in Table S1.

Table S1. Elements Identifier and Quantitative assessment of shungite samples before sonication

Name	Peak (BE)	FWHM (eV)	Area (CPS·eV)	Atomic (%)
C1S	284.76	1.16	61792.24	88.62
O1S	532.29	3.60	21751.34	11.38

Table S1 shows the XPS spectra of shungite after deconvolution. The main Shungite peak is carbon at 284.76 eV corresponding to sp²-hybridized carbon (C=C) and the oxygen peak at 532.29 eV corresponds to C=O. Shungite samples before treatment contain 88.62% hybridized carbon, and oxygen 11.38 %, most likely due to the presence of water in the samples.

Next, the samples were processed by the sonication method. The data obtained are presented in Table S2.

Table S2. Elements Identifier and Quantitative assessment of shungite samples after sonication

Name	Peak (BE)	FWHM (eV)	Area (CPS·eV)	Atomic (%)
C1S	284.58	1.46	16150.69	92.41
O1S	533.29	3.28	34194.57	7.59

Table S2 shows the XPS spectra after deconvolution of the sonicated shungite sample. Table S2 shows the peak of the sp² form of carbon, located at 284.5 eV, which is attributed to carbon. The peak is broadened compared to the peaks before treatment, and the concentration increases to 92.41%. The oxygen peak is shifted by 533.29, which corresponds to C-OH bonds and is 7.59%. The data supports our hypothesis that C=O bonds are broken.



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