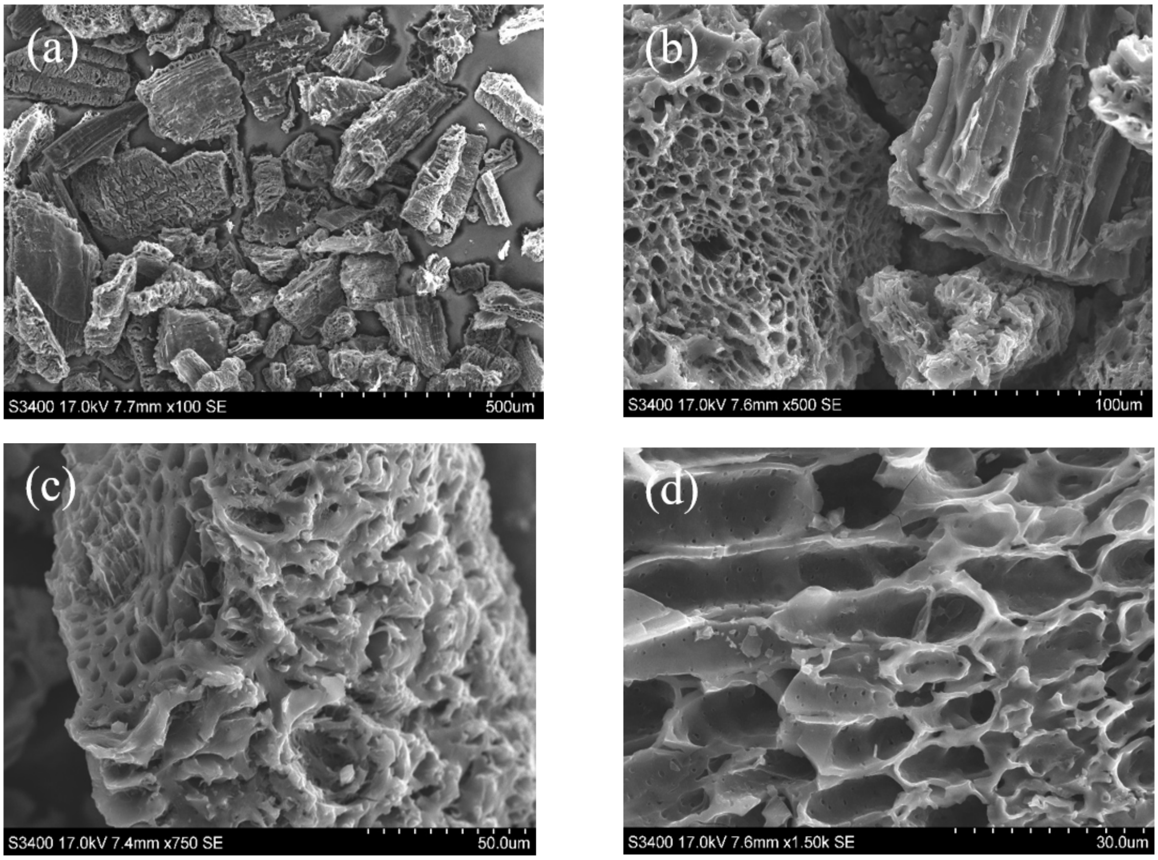
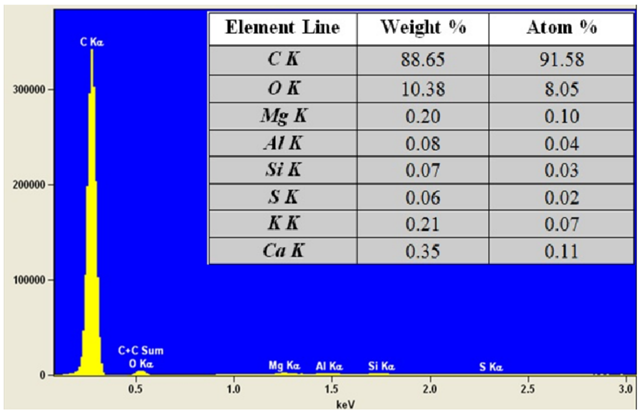


Fig. 1. SEM images of rice husk based AC at magnifications of (a) x100, (b) x500, (c) x750, and (d) x1500.

structure of macropores, which is a typical characteristic of carbonized and chemically activated plant materials. In turn, the presence of macropores on the surface of the obtained materials can serve as a necessary transport system due to which the electrolyte diffuses rapidly into the mesopores and further in micropores that making the main contribution to the formation of the specific surface area.

It is known that the physicochemical composition of the RH is characterized by the presence of a large amount of amorphous silicon oxide, the content of which in the original fibers varies at a level of 20 wt% [24]. Despite this, due to the preliminary leaching of carbonized RH by sodium hydroxide, a resulting content of SiO_2 or any other mineral component of resulting carbonaceous material becomes lower than the detecting limit of EDS apparatus (<0.5 wt%). Generally, as it can be seen from Fig. 2, elemental composition of RH-based AC is represented by carbon and oxygen which contents are approximately equal to 89 wt% and 10 wt%, respectively.

Isotherms of the low-temperature nitrogen adsorption-desorptionand details of pore size distribution are illustrated in Fig. 3a,b and summarized in Table. The isotherms of ACs shown in Fig. 3a



Element Line	Weight %	Atom %
C K	88.65	91.58
O K	10.38	8.05
Mg K	0.20	0.10
Al K	0.08	0.04
Si K	0.07	0.03
S K	0.06	0.02
K K	0.21	0.07
Ca K	0.35	0.11

Fig. 2. Energy-dispersive X-ray spectra of rice husk based AC (inlet – elemental analysis data).

correspond to Type I, which is typical for microporous materials (pore size d <2 nm). Meanwhile, at high relative pressure only minor hysteresis loops can be detected, which can indicate an existence of a small fraction of mesopores (pore size 2 ≤d ≤50 nm). Herein, the RH-AC possesses the highest nitrogen uptake, which suggests a highly developed porous structure. As is shown in Table, the specific surface area of RH-AC is 2290 m^2/g. The aforementioned value is bigger than of KYP