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The method of calculation of crystallographic characteristics of graphite

© Anna N. Popova
Federal Research Center on Coal and Coal Chemistry, Siberian Branch, Russian Academy of Sciences. Sovetskiy pr, 18. Kemerovo, 650000. Russia. E-mail: h991@yandex.ru

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Abstract

The X-ray diffraction method is one of the most common, and even non-destructive, methods that characterize carbon materials and composites based on them. X-ray diffraction is used to study the phase composition of the samples, to carry out the qualitative and quantitative composition of certain phases, to estimate the crystallographic structural characteristics of the carbon materials. The article is devoted to the results of calculation of the main structural parameters of graphites that have undergone various treatments. The main characteristics of the crystal structure of the samples are the interplanar spacing (d*00l*), the dimensions of the structural components (La and Lc), and the degree of ordering. To describe the heterogeneity of the samples phase composition, the obtained data are compared with the main crystallographic reflections of the (00l) series, which corresponds to the main plane of graphite. It is shown that the reflections (002), (004) and (006) are superposition of the components characterizing the individual structural phases of the investigated samples. The decomposition of the reflexes into structural components makes it possible to introduce an additional characteristic of the sample-the phase relationship, which makes it possible to better characterize the crystal structure of the samples in the case when their structural characteristics are close.

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