Determining graphene layers number distribution by XRD data

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An equation that uses Laue functions and a model which includes graphene thickness distribution were used to calculate XRD intensities of the curves that exhibit good fitting to the XRD intensities curves of the studied graphene samples. The subject of this study is graphene samples produced by different electrochemical procedures: electrolysis in aqueous electrolyte and electrolysis in molten salts. In both electrochemical procedures, reverse change of the applied potential was applied. The employed equation parameters make it possible to calculate the n-layer graphene regions coverage of the graphene samples, and the average value for number of graphene layers. Graphene produced in molten salts has shown better structural characteristics and lower number of layers.

Key words: Graphene, electrochemical production, XRD analysis, layers.