

A NOTE ON SORPTION.

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Received October 21, 1927. Published November 28, 1927.

In spite of the kind reply of Prof. Sameshima⁽¹⁾ I am still maintaining my opinion, that his experiments do not prove the correctness of the dissolution theory of sorption. The fact that the ratio—absorbing capacity: volume of the pores—for various kinds of charcoal is nearly constant, can not be explained by the theory, which considers the process of activation solely as a purification of the charcoal, without paying attention to the change of its structure.

Also one can not agree with the opinion that the grinding increases the surface area. The increase—if any—is extremely small, even if we assume with Prof. Sameshima that the number of particles derived from one cubic centimeter of charcoal is 10^{12} . The magnitude of the total area is not known and might be larger than 100 sq. meter. Lamb, Wilson and Chaney assume that it is equal to 1000 sq. meter for 1 c.c. of active charcoal⁽²⁾. If we agree with this figure, the increase of area by grinding, as computed by Prof. Sameshima⁽³⁾ will amount to 0.03% of the area. But it is useless to make such computations, as we do not know even the order of magnitude of the area. Freundlich says⁽⁴⁾: "...Deshalb ist es auch nicht gesagt, dass ein Zerpulvern des Adsorbens die adsorbierte Fläche vergrössert....Wenn nur schon vorhandene innere wirksame Oberfläche zu äusserer Oberfläche wird, so macht dies für die Adsorptions-oberfläche nichts aus." What I tried to do in my precedent paper⁽⁵⁾ was to show that in any case the grinding has a minimal effect upon the surface. We may assume that the dissolution of a gas plays in some cases a part in the phenomenon of sorption, but it is surely unsuitable to interpret it as a pure dissolution process, independent of the surface of the adsorbens.

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(1) This journal 2 (1927), 246.

(2) *J. Ind. Eng. Chem.*, 11 (1919), 427.

(3) Loc. cit.

(4) "Kapillarchemie", 3 ed. (1923), p. 177.

(5) This journal, 2 (1927), 243.