AN INTRODUCTION TO THE CHEMISTRY OF COLLOIDS: A COMPENDIUM OF COLLOIDAL CHEMISTRY FOR STUDENTS, TEACHERS, AND WORKS MANAGERS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649029648

An Introduction to the Chemistry of Colloids: A Compendium of Colloidal Chemistry for Students, Teachers, and Works Managers by Viktor Pöschl & Herbert H. Hodgson

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VIKTOR PÖSCHL & HERBERT H. HODGSON

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BY

DR. VICTOR PÖSCHL

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Translated from the Second, Enlarged, German Edition

BY

HERBERT H. HODGSON, M.A.(CAMB.), B.Sc.(LOND.), Ps.D.(HEIDELBERG),

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LONDON:

CHARLES GRIFFIN AND COMPANY, LIMITED.
PHILADELPHIA: J. B. LIPPINCOTT COMPANY.

1910.

INTRODUCTION.

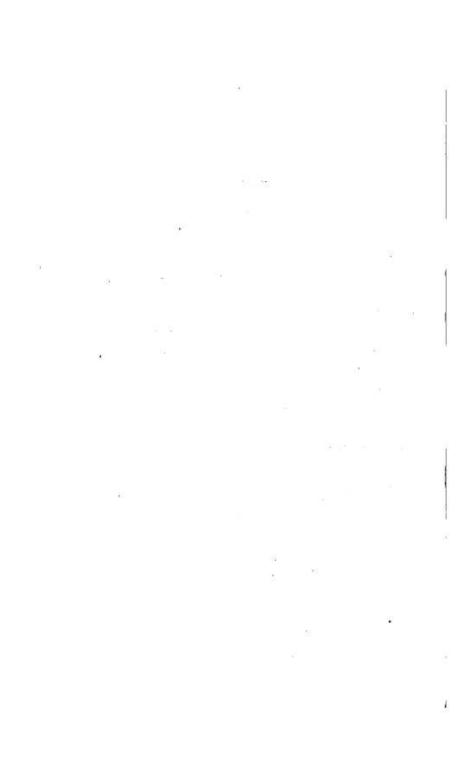
Until a few years ago the Colloids obtained but little recognition in General and Inorganic Chemistry, being infrequently, and then only imperfectly, mentioned.

A chemist, realising the importance of Colloidal Chemistry and desiring to become better acquainted with this interesting chapter of science, must have recourse to the whole of the special literature of the subject, a matter not always possible, and there has been no short compendium of the subject.

The Author endeavours to remedy this in the present volume, and aims at giving in concise form a review of the present position of the colloid problem, which will, it is hoped, meet the requirements of students of chemistry, pharmacy, &c., who desire to obtain the most essential knowledge concerning colloids.

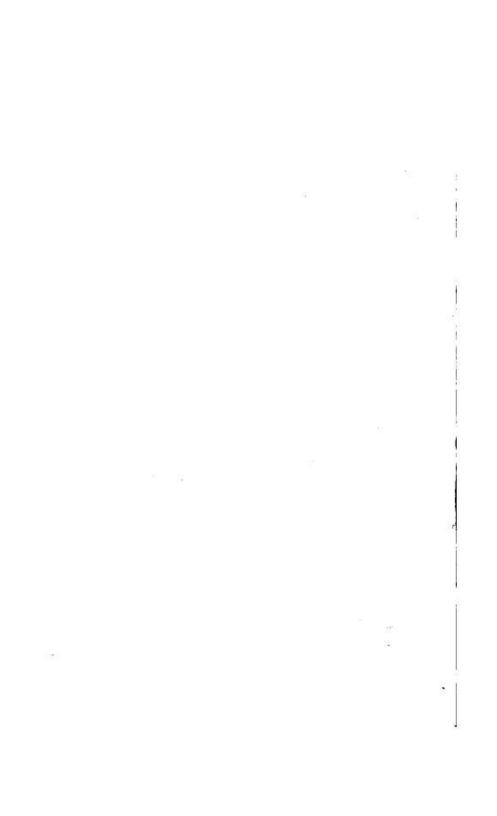
In addition, it will serve as a short manual for technologists, works managers, lecturers, and others who have not had opportunity of making acquaintance with this most recent development of science, which is undoubtedly of increasing importance.

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CHEMISTRY OF THE COLLOIDS.

I. General Characteristics. Nomenclature.

DURING his researches into the nature of the diffusion of dissolved substances, Thomas Graham found that certain bodies, especially those which crystallise with ease from their solutions, rapidly diffuse from their solvents into pure water or pass through animal membranes, while, on the other hand, amorphous matters retain their union with the solvent to a certain degree of tenacity, and exhibit a marked deviation in their properties from the first-named substances. In order to differentiate between crystalloidal substances and those bodies diffusing with difficulty, and of which glue (κόλλα) may be regarded as typical, he proposed for the latter the term "colloidal substances." Graham may be rightly considered as the investigator who laid the foundations of colloidal chemistry by means of his two fundamental works, which,



appearing in 1861 and 1864, contained the first comprehensive notice of the colloids.

The dissimilarity between the two classes named afforded to Graham, not only a means for their separation, but also a method for the preparation of pure colloids. If a layer of water be placed carefully over another containing both colloidal and crystalloidal substances in solution, then after a short interval part of the crystalloids will diffuse into the aqueous stratum above, while the colloids This diffusion may take place remain behind. through a partition composed of gelatinous material, and the resulting separation was termed by Graham "Dialysis." Animal membranes, and also suitable parchment paper (vegetable parchment), are used as dialysing partitions. The vessel known as the dialyser is closed at the base by the membrane and immersed in pure water. The process of diffusion through membranes is termed Osmose. As an example of dialysis, the case of a water solution containing gelatine, common salt and sugar may be cited; the two latter substances diffuse through the membrane as crystalloids, the gelatine remains behind as a colloid.

In addition to glue, which has already been mentioned, the following are recognised colloids:— Starch, dextrine, varieties of gum, albumen, caramel,

