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# Bibliography of Recent Research in the Field of High Polymers

by Robert Simha, Irma G. Callomon, Mary Budge Gaughan, and  
Helen H. Jeppson



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## **INTRODUCTION**

This bibliography, which supersedes National Bureau of Standards Letter Circular LC922 (October 1948), contains a reference list of papers that appeared in American and foreign scientific periodicals. The former cover the period January 1946 to December 1949, inclusive. The foreign journals included were those available up to January 1, 1950, in the Library of this Bureau. English periodicals are incorporated from 1945, Russian periodicals from 1943, Japanese periodicals from 1941, and the remainder from 1944. In some cases older issues have been included.

The literature included deals with fundamental investigations of the chemistry and physics of certain classes of natural and synthetic organic high polymers. The very nature of this project makes completeness an almost impossible task. Furthermore, it is often difficult to draw the line between research of a so-called fundamental and applied character. Thus, important material may have been omitted. Nevertheless, this bibliography should fulfill two purposes: first, to provide a source of reference for the active worker in the fields covered, and, second, to assist those concerned with related subjects in keeping informed of recent developments.

The material is arranged according to the main lines of research on high polymers currently being pursued. In some sections of the first part, dealing with physical properties of bulk materials, the various classes of high polymers are treated separately. No such division is warranted in the remainder of the bibliography according to modern concepts of high polymer theory.

The number of subdivisions is considerably extended in the current review. In division 100, Physical Properties of Bulk Materials, a section on optical investigations has been added. In 200, Solutions and Gels, there appear sections on polyelectrolytes, sorption of and swelling by gases and liquids, rheological properties of concentrated solutions, and adhesion. In 300, Reactions, subdivisions on bulk, solution and emulsion polymerization, and copolymerization have been included. These extensions will facilitate the search for specific articles or authors in a particular field. On the other hand, the increased number of categories increases the probability of incorrect classification and causes some difficulties when several subjects are treated in the same paper.

In this connection, conflicts between sections, such as solution polymerization and copolymerization or viscosity and osmotic pressure may be mentioned. In these and similar cases, the principle purposes and aspects of the article have been taken into consideration. Even so, the decision is somewhat arbitrary and the reader may disagree in several instances. The same is true in respect to the various sections called "general".

The preparation and properties of monomers are not considered here. Strictly speaking, substances such as proteins or starches should be included in such a review. The same is true for articles dealing with leather or paper as such. Here, however, some of the details of experimental techniques and theoretical approaches are different, and research in these fields is sufficiently specialized to justify exclusion from this bibliography. It is realized that such a procedure may eliminate studies that are of importance to polymer work in general. On the other hand, a few articles dealing with the general theory of transport phenomena in liquids have been included. Strictly speaking, they do not belong in this bibliography. However, because of their generality and perhaps due to the authors' personal preference, they appear here.

Books, such as *High polymer physics*,<sup>1</sup> *Proceedings of the second rubber technology conference, London 1948*,<sup>2</sup> *Proceedings of the International Rheological Congress, Holland 1948*,<sup>3</sup> booklets, theses, and periodicals dealing with specific types of polymers are not covered in this bibliography. To include them would greatly increase the bulk of the bibliography without correspondingly increasing its usefulness. However, for the benefit of students and specialists in other fields who may be approaching the study of high polymers for the first time, we are listing some examples of pertinent periodicals and abstract services. This list is neither complete nor highly critical, but should be representative of the current literature and includes sources that will be found useful.

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<sup>1</sup> Remsen Press Division, Chemical Publishing Co., Inc., Brooklyn, N. Y., 1948.

<sup>2</sup> W. Heffer & Sons, Ltd., London, England, 1949.

<sup>3</sup> North Holland Publishing Co., Amsterdam, Holland, 1949. Obtainable at Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y.



## PERIODICALS DEALING WITH SPECIFIC TYPES OF POLYMERS

### Rubber

*Rubber chemistry and technology* reprints literature on rubber judged to be of permanent scientific value. Foreign papers are translated into English. Published quarterly by the Rubber Division of the American Chemical Society, Prince and Lemon Sts., Lancaster, Pa.

*Research Association of British Rubber Manufacturers. Summary of current literature.* Scientific, technical, trade, and patent literature on rubber is thoroughly covered. Publications more difficult to obtain, such as Russian and Japanese, are abstracted in detail to eliminate reference to the original articles. Published monthly by the Association, 105 Lansdowne Road, Croydon, England.

*National Bureau of Standards Letter Circular LC626* (January 15, 1941) by A. T. McPherson, represents a guide to the literature on rubber.

### Plastics

*Modern plastics* covers current developments in the plastics industry and presents abstracts of papers. Published monthly by Modern Plastics, Inc., 122 E. 42d St., New York 17, N. Y.

*British plastics*, official organ of the Plastics Industry. Published monthly by the Iliffe and Sons, Ltd., Dorset House, Stamford St., London, S.E.1, England.

*Plastics (London)* covers papers dealing with the manufacture, uses, and potentialities of plastic materials. Published monthly by Temple Press, Ltd., Bowling Greene Lane, London E.C.1, England.

*National Bureau of Standards Letter Circular LC975* (January 13, 1950) by G. M. Kline, contains references to a series of books and periodicals in the field of plastics.

### Textiles

*Textile research journal* covers fundamental and applied research and presents abstracts of papers. Official publication of the Textile Research Institute, Inc., and The Textile Foundation. Published monthly at Prince and Lemon Sts., Lancaster, Pa.

*Journal of the Textile Institute*, official journal for communications released for publication by various British research organizations. Abstracts are presented. Published monthly by the Textile Institute, St. Mary's Parsonage, Manchester, England.

*The Journal of the Society of Dyers and Colourists*, official publication of the Society. Covers original work and presents abstracts of foreign papers and patents. Published monthly, 32 Piccadilly, Bradford, Yorkshire, England.

### Abstract Services

*Resins—rubbers—plastics.* A loose-leaf abstract service covering chemical, physical, and technological aspects of these materials. Published monthly by the Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y.

*Natural and synthetic fibers.* A loose-leaf literature and patent abstract service covering chemical, physical, and technological aspects of these materials as well as patent applications. Issued monthly in cooperation with Milton Harris Associates, Washington, D. C. and the Polymer Research Institute, Polytechnic Institute of Brooklyn. Published by Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y.

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## 203. CONCENTRATED SOLUTIONS, GELS, FILMS

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