

Chemistry Paper 42 November 12 Mark Scheme

This Brief presents for the first time a detailed historical overview of the development of acetylene polymers, beginning with the initial discovery of acetylene in 1836 and continuing up through the 2000 Nobel Prize in Chemistry. The polymerization of acetylene is most commonly associated with polyacetylene, which was found to be conductive when treated with oxidizing agents such as Br₂ or I₂ in the mid-to-late 1970s. In fact, under the right conditions, oxidized polyacetylenes can exhibit conductivities into the metallic regime, thus providing the first example of an organic polymer exhibiting metallic conductivity. As a consequence, the 2000 Nobel Prize in Chemistry was awarded to Hideki Shirakawa, Alan MacDiarmid, and Alan Heeger for this pioneering research, the award citation reading “for the discovery and development of electrically conductive polymers.” Because of this, most incorrectly view polyacetylene, as well as conducting polymers in general, to originate in the 1970s. In this work, the author examines the polymerization of acetylene from early thermal polymerization studies to the ultimate production of the fully conjugated polyacetylene. Although true polyacetylene was not successfully produced until the 1950s by Giulio Natta, the polymerization of acetylene dates back to 1866 with the work of Marcellin Berthelot. These initial efforts were continued by a range of scientists to produce a polymeric material collectively given the name cuprene in 1900 by Paul Sabatier. Between the initial cuprene studies and the production of true polyacetylene, two related materials were also studied, usually referred to as polyenes and polyvinylenes. Although both of these materials could be thought of as forms of polyacetylene, neither was actually generated from the direct polymerization of acetylene. Readers will gain insight into the fact that polyacetylene and conducting organic polymers have a much longer history than commonly believed and involved the work of a significant number of Nobel Laureates.

Catalogue of the Public Documents of the ... Congress and of All Departments of the Government of the United States

Monthly Catalogue, United States Public Documents

August 28th-30th 2001

The British Catalogue of Books Published from October 1837 to December 1852

Bibliography of Agriculture with Subject Index

This volume presents topics addressed at the working group meeting and workshop on Computer-generated Conjectures from Graph Theoretic and Chemical Databases held at Rutgers University (Piscataway, NJ). The events brought together theoreticians and practitioners working in graph theory and chemistry to share ideas and to set an agenda for future developments in the use of computers for generating scientific conjectures. Articles included in the volume were written by developers of some of the most important programs used around the world today, and topics represented in these articles center around various approaches to the use of computers to generate scientific conjectures, mainly in graph theory and chemistry. These approaches combine ideas from such disciplines as theoretical and applied computer science, statistics, discrete and non-discrete mathematics, chemistry, and information science.

Weathering of Polymers

Pu Latin America 2001

DIMACS Working Group, Computer-generated Conjectures from Graph Theoretical and Chemical Databases, November 12-16, 2001, DIMACS Center, CoRE Building, Rutgers University : DIMACS Public Event, Graph Theory Day 42, November 10, 2001, DIMACS Center, CoRE Building, Rutgers University

Abstract Bulletin

The British Catalogue of Books, Published from October 1837 to December 1852: General alphabet

This report describes the theory of weathering and its effect on polymer properties, methods of stabilisation, and natural and accelerated weathering tests. The problems associated with particular polymers used in outdoor applications are explained. An additional indexed section containing several hundred abstracts from the Rapra Polymer Library database provides useful references for further reading.

Cumulated Index Medicus

Report

Index to the British Catalogue of Books: 1837-1857. 1858

Advances in Petroleum Chemistry and Refining

NBS Special Publication

The Chemical Components of Tobacco and Tobacco Smoke chronicles the extraordinary progress made by scientists in the field of tobacco science, from its beginnings in the early 1800s to the present. This comprehensive text provides over 6000 references on more than 8400 components identified in tobacco and tobacco smoke. Authored by two longtime rese

150+ Years of History

Monthly Catalog of United States Government Publications

A Biographical Directory

Bibliography of rubber literature (excluding patents)

Acetylene and Its Polymers

This highly respected and valued textbook has been the book of choice for Cambridge IGCSE students since its publication. This new edition, complete with CD-ROM, continues to provide comprehensive, up-to-date coverage of the core and extended curriculum topics specified in the IGCSE Chemistry syllabus. The book is supported by a CD-ROM containing extensive revision and exam practice questions, background information and reference material.

Publications of the National Institute of Standards and Technology ... Catalog

Containing the Date of Publication, Size, Price, Publisher's Name and Edition

Official Gazette of the United States Patent Office

Provincial Medical & Surgical Journal

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