

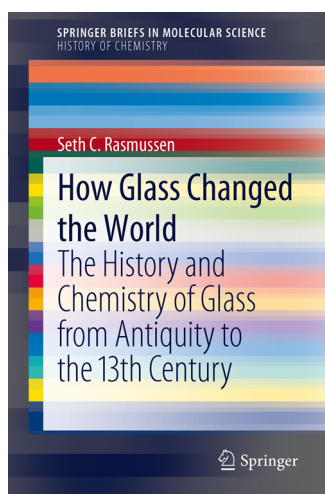
Review of *How Glass Changed the World: The History and Chemistry of Glass from Antiquity to the 13th Century*

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How Glass Changed the World: The History and Chemistry of Glass from Antiquity to the 13th Century, by Seth C. Rasmussen. Springer: New York, 2012. 85 pp. ISBN: 978-3642281822 (paperback). \$49.95.

How Glass Changed the World: The History and Chemistry of Glass from Antiquity to the 13th Century is a Springer Brief in Molecular Science History of Chemistry book written by Seth C. Rasmussen. This book is exciting and enjoyable to read, especially for anyone who is interested in glass. The book provides a dynamic introduction to glass via the history of glassmaking, with the supporting chemistry. The author creatively combines history, chemistry, materials science, and archeology to give an overview of the impact glass has on society, and specifically, the impact glass has had in the advancement of science. This book results from the author's interest and research in the development of glass and its applications to chemical apparatus. The book is eloquently written and is neatly organized into six chapters that include useful tables, figures, diagrams, maps, and references to aid in telling a story of the history, the developments, and the chemistry of glassmaking and glass, with its applications in science and in the laboratory.



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The first chapter presents the origins and early locations of glassmaking, along with an excellent introduction into the chemistry, structure, and the properties of glass. Rasmussen briefly discusses the basic underlying chemistry of glass and the importance of the raw materials used for glassmaking. He also provides a basic discussion of the primary components of glass, the use of flux, and the different colors of glass. Finally, this chapter provides a short discussion of the importance of the

First and Second Golden Ages of Glass. During these time periods, the new developments of glassmaking resulted in significant contributions to the function and applications of glass.

The second chapter describes the origins of glass and focuses on the discovery of glassmaking. This chapter begins with the accounts of the development and production of glass that are described by the uncertainties and myths of early glassmaking. The known history of glassmaking follows with its possible birth in metallurgy and development of siliceous ceramics coated with glazes.

The third chapter explains the growth and development of glass, starting with the earliest developments in Mesopotamia and Syria, through Egypt and the Mediterranean, then finally, concluding with the Roman period, the First Golden Age (the first to fourth centuries, CE). This chapter discusses the primary components of silica and alkali sources used for glassmaking and the significance these sources have on the chemical stability of glass. The chemical composition of the sources from these regions is provided. In addition, Rasmussen presents the significance of core-molding and cast glass. The remainder of the chapter discusses the strong influence the Roman Empire has had on glassmaking, including the production and practical application of window glass.

The fourth chapter describes the advancements and improvements in glassmaking during the Venetian period, the Second Golden Age of Glass. The author starts the discussion with how glassmaking was affected by regional influences after the decline of the Roman Empire. The techniques developed during the Roman period had become less pervasive. Next, a discussion of the developments of glassmaking in Venice and Murano is presented. Here, the glass industry prospered and some of the Venetian glassware was regarded as the best quality glass. The chapter concludes with the methods and materials used in Venetian glassmaking.

The fifth chapter discusses the evolution of laboratory glassware and its applications to chemical apparatuses. This chapter presents the thermal and chemical durability of glassware with the advances in Venetian glassmaking leading to the development of lab glassware and glass applications in laboratory apparatuses.

The last chapter is about the development of glass objects and instruments, such as thermometers, barometers, eyeglasses, mirrors, telescopes, and microscopes, and their functional impact on society and in science. In addition, Chapter 6 lays out a brief introduction of how glass products have led to discoveries that have permanently changed society and the sciences—specifically, the important role distillation equipment

played for the isolation of alcohol. In addition, Rasmussen presents the changes to the laboratory setting due to the accessibility of mineral acids used by the practitioner.

How Glass Changed the World is both informative and educational. For a book that has fewer than 90 pages, the author provides readers with a cornucopia of information. Although this book would be an excellent resource for experts in the discipline of glass research, the primary audience for this book could be anyone who has an interest in glass. Many books about glass discuss glass objects or art and the history with little to no information about glass chemistry. This book takes a unique and novel approach in which Rasmussen incorporates the chemistry involved in the development of glassmaking and the chemistry of the glass itself. Often, we forget about the impact glass has on society today. Where would we be today in the many disciplines of science and medicine without the improvements of laboratory glassware and the new developments in glassmaking? This book will expand your historical, geographical, scientific, and chemical knowledge of glassmaking along with the correct terminology and lingo used in glass and glassmaking studies. For beginning researchers, this book would be an excellent introductory text, providing them with the information needed to jump into the area of glass research.

In conclusion, this book is highly recommended, whether you are a novice or an expert in glass research or you are just interested in glass and glassmaking. It is easy to read and understand, even for those individuals with minimal background knowledge in science and chemistry. This is a must read!

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Notes

The authors declare no competing financial interest.