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Sommario/riassunto

The membrane separation process has emerged as a powerful separation technique and has become an integral part of modern process industries. This has found wide applications in the field of biotechnology, beverage, dairy industry, clarification of fruit juice, waste water treatment etc. The advantages of these processes are their unique separation capabilities, low energy consumption, high throughput, and ease of scaling etc., compared to conventional separation processes. However, the application of membrane separation process has been limited by the presence of concentration polarization and membrane fouling. These lead to decline in permeate flux and change in retention behaviour. Therefore, the ways to reduce concentration polarization and thereby enhancing the filtration rate are currently active areas of research in view of the increasing demand of membranes application to various industrial separation processes. To minimize the membrane fouling and concentration polarization, several techniques have been investigated. In this regard, application of external d.c. (direct current) electric field across the membrane is a

promising method to reduce concentration polarization and fouling. This book deals with the relevant principles, technology and the theoretical details involved in this process. It is to be emphasized that no such book dealing with electric field assisted membrane filtration exists currently. Therefore, this book obviously has significant advancement compared to existing books on membrane technology. This book can be used as one of the Texts for the course like aeoeNovel Separation Processesae taught in Postgraduate level. Of course, this book can be an extremely useful reference book for the students and professionals in Chemical and Environmental Engineering. We believe this book will have two fold impacts. Firstly, its academic value is quite high; Secondly, it will have remarkable impact of scaling up such system in actual industrial scale from pilot plant data in an emerging area. Moreover, a book on such a topic does not exist today; the importance of it from an academic point of view is undoubtedly remarkable.This book presents detailed description of the effect of electric field to a number of typical applications, e.g. fruit juice clarification, separation and fractionation of protein solution, micellar enhanced ultrafiltration for dye removal. The results are analyzed in full detail.