

Preface

Glass was among the oldest man-made materials and has been a material used by mankind starting from the Bronze Age for making various kinds of bottles, mirrors, windows, vases, plaques, inlays, jewellery, etc. In ancient times, glass was considered a valuable commodity and was mainly used for decorative purposes to boost the power, status and political allegiances of the elite. Although the concept of glass lens was conceived in the first millennium (BC), it was not until the 19th century (AD) that glass was exploited exhaustively as an optical material (optical components to electric bulb). In the 20th century glass was given a different dimension altogether and was used in optical fibres, laser host materials, DVD's, displays etc. Mostly silica and silicate glasses were in the forefront from the beginning. However, in the last few decades, non-silicate glasses have been found to be useful in photonics application and few of them are more attractive than the conventional silica based glasses in many aspects; for example higher refractive index, extended IR transmission window and good rare-earth host, to mention a few.

This book deals with non-conventional photonic glasses and also a relatively new category of materials in photonics named transparent glass-ceramics. Glass-ceramics are optical composite which not only have the flexibility of the glassy materials but also have the salient features of the crystalline materials. The book begins with industrially important non-silicate photonic glasses (fluoride, chalcogenide and tellurite) and then moves onto the photonic glass-ceramics with the transition being the thermally poled glasses. The book as a whole and each chapter in particular is structured to reflect the current advances in the field along with a reasonable review of each of the discussed glass and glass-ceramic materials. The authors are all experts in the relevant fields. Although this is a dynamic field which is continually advancing, the book will nevertheless help the readers to understand the fundamental concepts and essence of the subject.

This book is intended as a research review and could be used by researchers and post graduate students as a starting point to learn the history/background of any of the research topic discussed in each chapter and its current state of the art. I make no statement that the book is complete although it was my goal to work towards a complete coverage of the non-conventional photonic glasses and glass-ceramics.

I am grateful to the authors who contributed to the book. Without their commitment, cooperation and responsiveness in producing each of the excellent review chapters, this would have not been possible. My deepest gratitude goes to all of them.

I am indebted to Prof. K.B.R. Varma, Prof. Evelyne Fargin, Dr. Thierry Cardinal, Prof. Yasutake Ohishi and Prof. James Wilkinson for moulding me to a shape where I am confident enough to edit such a review book.

I am very grateful to the managing editor and the entire team at Research Signpost for the initiative and coordination towards the production of this book.

Last, but not least, I thank my wife, Shagila, and my daughter, Oviya, for their understanding while I spent the 2007 Christmas holidays and many weekends on the book instead of spending time with them.

Ganapathy Senthil Murugan

Contents

- ❖ Fluoride glasses: Properties, technology and applications
Marcel Poulain
- ❖ Chalcogenide glasses for photonics device applications
*Daniel W Hewak, Dominic Brady, Richard J Curry
Greg Elliott, Chung-Che Huang, Mark Hughes
Kenton Knight, Arshad Mairaj, Marco Petrovich
Rob Simpson and Chris Sproat*
- ❖ Tellurite and phospho-tellurite glasses: Candidate materials for fiber Raman amplifiers
*Ganapathy Senthil Murugan, Tekenobu Suzuki
and Yasutake Ohishi*
- ❖ Second-order nonlinear optical properties induced by thermal poling in photonic oxide glasses and transparent glass-ceramics
*Evelyne Fargin, Thierry Cardinal, Artem Malakho
Marc Dussauze, Efstratios I. Kamitsos, Vincent Rodriguez
Michel Couzi, Frédéric Adamietz, Lionel Canioni
Bruno Bousquet, Philippe Thomas
and Ganapathy Senthil Murugan*
- ❖ Multifarious transparent glass nanocrystal composites
*C. Karthik, M. Niyaz Ahamad, B. Harihara Venkataraman
N. Syam Prasad, G. Senthil Murugan and K.B.R. Varma*
- ❖ Transparent silicate glass-ceramics embedding Ni-doped nanocrystals
*Takenobu Suzuki, Ganapathy Senthil Murugan
and Yasutake Ohishi*
- ❖ Rare-earth ions doped transparent oxyfluoride glass-ceramics
Daqin Chen and Yuansheng Wang

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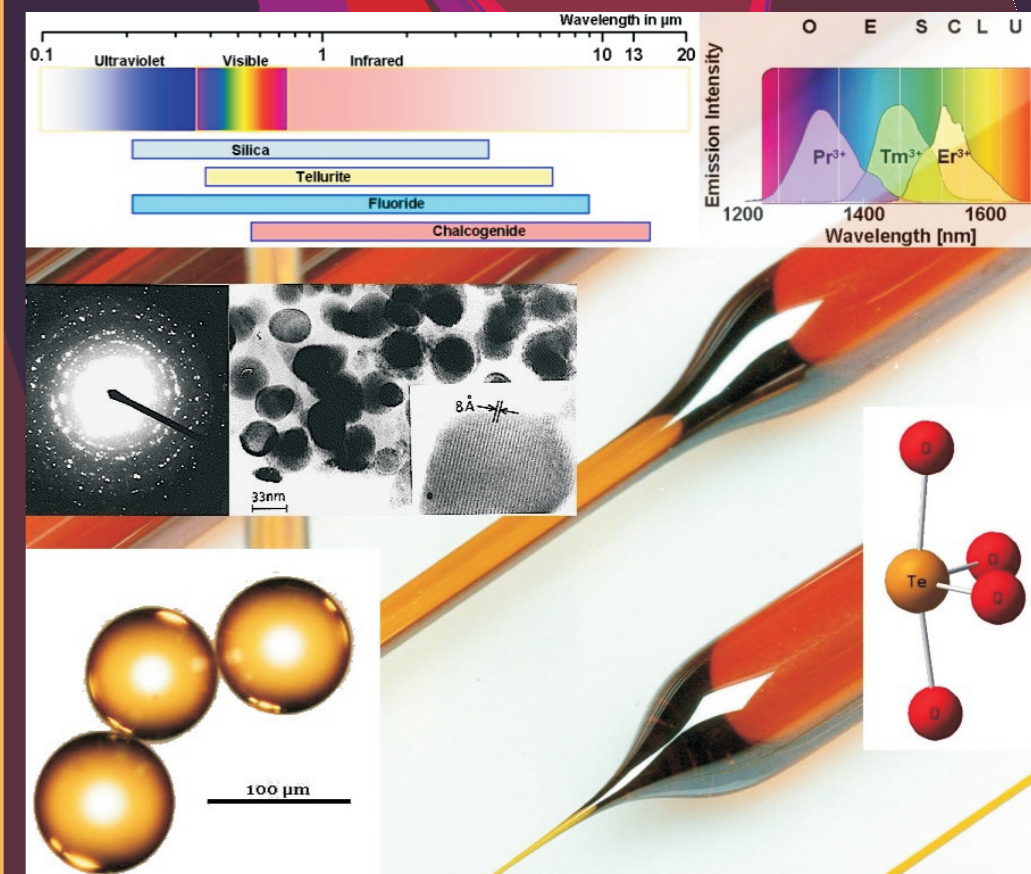
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