
SOL-GEL OPTICS PROCESSING AND APPLICATIONS

Edited by

Lisa C. Klein

Rutgers, The State University of New Jersey



KLUWER ACADEMIC PUBLISHERS
BOSTON/DORDRECHT/LONDON

Table of Contents

Part I: Sol-Gel Processing of Optical Materials

Chapter 1:	Sol-Gel Processing - General Principles	
	E. M. Rabinovich	1
Chapter 2:	Sol-Gel Chemistry for Optical Materials	
	J. Livage, F. Babonneau and C. Sanchez	39
Chapter 3:	Sol-Gel Processing of Net Shape Silica Optics	
	L.L. Hench and J. L. Nogues	59
Chapter 4:	Large Silica Monoliths	
	S. R. Chaudhuri and A. Sarkar	83
Chapter 5:	Sol-Gel Fabrication of Glass Fibers for Optics	
	K. Kamiya	109
Chapter 6:	Optical Coating Fabrication	
	I. M. Thomas	141
Chapter 7:	A High Temperature Sol-Gel Process for Glass Formation: Aerosol Doping in Modified Chemical Vapor Deposition	
	T. F. Morse, A. Kilian and L. Reinhart	159
Chapter 8:	Nonsilicate Optical Coatings	
	D. S. Hagberg and D. A. Payne	169
Chapter 9:	Fluoride Optical Materials	
	R.E. Riman	197
Chapter 10:	Nanocomposite Fabrication for Transparent Windows	
	L. C. Klein	215

Part II: Applications of Sol-Gel Optics

Chapter 11:	Single Layer and Multilayer Colored Coatings on Glass	
	D. Ganguli	233
Chapter 12:	Sol-Gel Processing of Ferroelectric Films	
	M. Sayer and G. Yi	255

Chapter 13:	Doped Sol-Gel Films for Fiber Optic Chemical Sensors	
	M.R. Shahriari and J. Y. Ding	279
Chapter 14:	Sol-Gel Encapsulated Molecules: Optical Probes and Optical Properties	
	J. I. Zink and B. Dunn	303
Chapter 15:	Semiconductor-Doped Sol-Gel Optics	
	M. Nogami	329
Chapter 16:	Catalyst Doped Sol-Gel Materials	
	T. Lopez and R. Gomez	345
Chapter 17:	Gel Derived Gradient Index Optics-Aspects of Leaching and Diffusion	
	T. M. Che, M. A. Banash, P. R. Soskey and P. B. Dorain	373
Chapter 18:	Gradient Index (GRIN) Elements by Sol-Gel Interdiffusion	
	M. Yamane	391
Chapter 19:	Photonics and Nonlinear Optics with Sol-Gel Processed Inorganic Glass: Organic Polymer Composites	
	R. Burzynski and P. N. Prasad	417
Chapter 20:	Inorganic-Organic Composites for Optoelectronics	
	H. Schmidt	451
Chapter 21:	Laser Processing of Sol-Gel Coatings	
	B.D. Fabes	483
Chapter 22:	Laser Densification of Micro-Optical Arrays	
	T. Chia and L.L. Hench	511
Chapter 23:	Organically Doped Sol-Gel Porous Glasses: Chemical Sensors, Enzymatic Sensors, Electro-Optical Materials, Luminescent Materials and Photochromic Materials	
	D. Avnir, S. Braun, O. Lev, D. Levy and M. Ottolenghi	539
Index		583