1.	Record Nr.	UNINA9910818382303321
	Autore	Marghussian Vahak
	Titolo	Nano-glass ceramics : processing, properties and applications / / Vahak Marghussian
	Pubbl/distr/stampa	Oxford, England ; ; Waltham, Massachusetts : , : William Andrew, , 2015 $©$ 2015
	ISBN	0-323-35432-7
	Descrizione fisica	1 online resource (293 p.)
	Collana	Micro & Nano Technologies Series
	Disciplina	660.284298
	Soggetti	Glass-ceramics
		Nanostructured materials
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Front Cover; Nano-Glass Ceramics; Copyright Page; Contents; Preface; Introduction; 1 Glass Crystallization; 1.1 Nucleation in Glass; 1.1.1 Homogeneous Nucleation; 1.1.1.1 Theoretical Background; 1.1.2 Experimental Studies of Homogeneous Nucleation; 1.1.2 Heterogeneous Nucleation; 1.1.2.1 Theoretical Background; 1.1.2.1.1 General Considerations; 1.1.2.1.2 Epitaxy in Heterogeneous Nucleation of Glasses; 1.1.2.1.3 The Effect of Glass-in-Glass Phase Separation on Heterogeneous Nucleation; 1.1.2.2 Experimental Studies of Heterogeneous Nucleation 1.1.2.2.1 Heterogeneous Nucleation in the Presence of Phase Separation in Glass1.1.2.2.2 Crystal Nucleation in the Absence of Phase Separation in Glass; 1.1.2.3 Secondary Crystallization; 1.1.2.2.4 Determination of the Optimum Nucleation Temperature and Time; 1.1.2.5 Determination of the Type and Amount of Effective Nucleating Agents by DTA; 1.1.2.6 Determination of Crystal Nucleation rates; Particle Counting Method; Thermal Analysis Methods; 1.1.3 Nonclassical Theories of Crystal Nucleation in Glass; 1.1.3.1 General Considerations; 1.1.3.2 Phenomenological Models 1.1.3.3 Density Functional Theory1.2 Crystal Growth in Glass; 1.2.1 Theoretical Background; 1.2.1.1 Normal Growth Model; 1.2.1.2 The Screw Dislocation Growth Model; 1.2.1.3 2D Surface-Nucleated Growth; 1.2.1.3.1 Jackson's Model for the Interface; 1.2.2 Experimental Studies

	of Crystal Growth in Glass; 1.3 Alternative Mechanisms of Glass Crystallization at Low Temperatures; 1.4 Overall Glass Crystallization Kinetics; 1.4.1 Theoretical Background; 1.4.2 Experimental Studies of the Crystallization Kinetics in Glass; 1.5 Concluding Remarks; 2 Optical Properties of Nano-Glass Ceramics 2.1 Theoretical Background of Transparency2.2 Application of Optical Nano-Glass Ceramics; 2.2.1 Low Thermal Expansion Glass Ceramics; 2.2.1.1 Structure, Properties, and Application of Stuffed -Quartzss Glass Ceramics; 2.2.2 Luminescent Glass Ceramics; Theoretical Background; Laser Applications; Frequency Up-Conversion; Amplification at 1.3 and 1.5m; Solar Energy Applications; Most Common Luminescent Glass Ceramics; 2.2.2.1 Transparent Mullite Glass Ceramics Structure, Optical Properties, and Application of Transparent Mullite Glass Ceramics; Properties and Application of Transparent Spinel Glass Ceramics; Processing of Mullite Glass Ceramics; 2.2.2.2 Spinel Glass Ceramics; Properties and Application of Transparent Spinel Glass Ceramics; Broadband Optical Amplifiers and Tunable Lasers; Passive Q- switchers; Processing of Spinel Glass Ceramics; 2.2.2.3 Oxyfluoride Glass Ceramics; Properties and Application of Fluorescent Oxyfluoride Glass Ceramics; Operties and Application of Fluorescent Oxyfluoride Glass Ceramics; Properties and Application of Fluorescent Oxyfluoride Glass Ceramics; Properties and Application of Fluorescent Oxyfluoride Glass Ceramics; Other Host Nano-Crystals Down-Conversion Fluorescent Oxyfluoride Glass Ceramics
Sommario/riassunto	First book covering all aspects of nano-crystalline glass ceramics - one-stop reference source for researchers and engineers in a broad range of industries such as Biomedical devices and Optoelectronics