1.	Record Nr.	UNINA9910484164303321
	Autore	Bohn Bernhard Johann
	Titolo	Exciton Dynamics in Lead Halide Perovskite Nanocrystals : Recombination, Dephasing and Diffusion / / by Bernhard Johann Bohn
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
	ISBN	3-030-70940-X
	Edizione	[1st ed. 2021.]
	Descrizione fisica	1 online resource (XXII, 152 p. 62 illus., 58 illus. in color.)
	Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5061
	Disciplina	621.38152
	Soggetti	Nanoscience
		Photovoltaic power generation
		Optical spectroscopy
		Nanoparticles
		Electronics - Materials
		Optical materials
		Nanophysics
		Photovoltaics
		Optical Spectroscopy
		Electronic Materials
		Optical Materials
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Introduction -- Fundamentals -- Materials and Methods -- Recombination -- Dephasing -- Diffusion.
	Sommario/riassunto	Less than a decade ago, lead halide perovskite semiconductors caused a sensation: Solar cells exhibiting astonishingly high levels of efficiency. Recently, it became possible to synthesize nanocrystals of this material as well. Interestingly; simply by controlling the size and shape of these crystals, new aspects of this material literally came to light. These nanocrystals have proven to be interesting candidates for light emission. In this thesis, the recombination, dephasing and diffusion of excitons in perovskite nanocrystals is investigated using time-resolved spectroscopy. All these dynamic processes have a direct

impact on the light-emitting device performance from a technology point of view. However, most importantly, the insights gained from the measurements allowed the author to modify the nanocrystals such that they emitted with an unprecedented quantum yield in the blue spectral range, resulting in the successful implementation of this material as the activelayer in an LED. This represents a technological breakthrough, because efficient perovskite light emitters in this wavelength range did not exist before.