

1. Record Nr.	UNINA9910770271903321
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Titolo	Two-Dimensional Superconductivity in Rare Earth Oxybismuthides with Unusual Valent Bismuth Square Net // by Ryosuke Sei
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9973-13-9
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (124 pages)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5061
Disciplina	537.623
Soggetti	Inorganic chemistry Superconductivity Superconductors Optical materials Physical chemistry Inorganic Chemistry Optical Materials Physical Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	General introduction -- Experimental techniques -- Development of solid-phase epitaxy techniques -- Two-dimensional superconductivity in polycrystalline Y2O2Bi -- Unusual superconductivity in Tb2O2Bi -- Universal superconductivity in R2O2Bi -- General conclusion.
Sommario/riassunto	This book elucidates fascinating electronic phenomena of unusual Bi ² -square net in layered R ₂ O ₂ Bi (R: rare earth) compounds using two approaches: the fabrication of epitaxial thin films and the synthesis of bulk polycrystalline powders. The Bi ² -square net compounds are a promising platform to explore exotic physical properties originating from the interplay between a two-dimensional electronic state and strong spin–orbit coupling; however, there are few reports on Bi ² -square net compounds due to the instability of unusual electronic configurations. The book presents the development of synthetic routes for R ₂ O ₂ Bi compounds, such as novel solid phase epitaxy techniques and chemical control of crystal structure, demonstrating the intrinsic

physical properties of Bi₂-square net for the first time. The most notable finding is the successful induction of two-dimensional superconductivity in Bi₂-square net with the coexistence of rich electronic phases. The book also discusses the superconducting mechanisms and the effect of R cation substitution in detail and describes the mechanical properties of Bi₂-square net. These findings overturn the results of previous studies of R₂O₂Bi. The book sheds light on hidden layered compounds, representing a significant advance in the field.
