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Sommario/riassunto

This book presents a comprehensive exploration of the research and development of modern lead-free ferroelectric piezoceramic materials (FPCMs). Authored by Russian scientists from the Rostov Scientific School on Ferro-piezoelectricity, the book looks at the theoretical and experimental challenges associated with these environmentally friendly materials. It highlights the transition from traditional lead-containing materials to innovative lead-free alternatives, emphasizing their significance in various advanced fields such as biomedicine, information technology, robotics, and precision engineering. The book provides a detailed analysis of the methodologies employed for the preparation of FPCMs, the impact of structural inhomogeneities on their properties, and the development of new active materials. It also covers the extensive experimental data on the modification of solid solutions, the influence of different modifiers, and the resulting electrical, dielectric, and mechanical characteristics. This book serves as an essential resource for researchers, engineers, and students interested in the cutting-edge advancements in environmentally friendly smart materials and their wide-ranging applications.