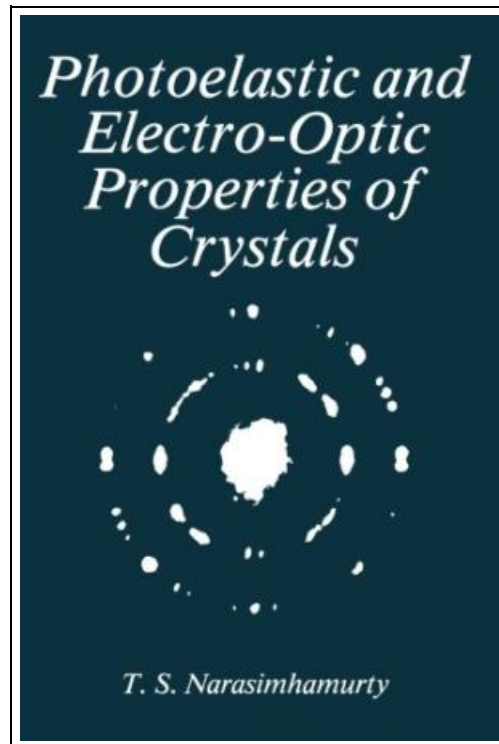# Photoelastic and Electro-Optic Properties of Crystals

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Reviews

Without doubt, this is actually the greatest function by any article writer. It is among the most amazing publication i have got read. Its been printed in an exceedingly basic way in fact it is simply after i finished reading through this publication where in fact changed me, change the way i believe.
(Arielle Ledner)

PHOTOELASTIC AND ELECTRO-OPTIC PROPERTIES OF CRYSTALS

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Book Condition: New. Publisher/Verlag: Springer, Berlin | This comprehensive treatise reviews, for the first time, all the essential work over the past 160 years on the photoelastic and the closely related linear and quadratic electro-optic effects in isotropic and crystalline mate rials. Emphasis is placed on the phenomenal growth of the subject during the past decade and a half with the advent of the laser, with the use of high-frequency acousto-optic and electro-optic techniques, and with the discovery of new piezoelectric materials, all of which have offered a feedback to the wide interest in these two areas of solid-state physics. The first of these subjects, the photoelastic effect, was discovered by Sir David Brewster in 1815. He first found the effect in gels and subsequently found it in glasses and crystals. While the effect remained of academic interest for nearly a hundred years, it became of practical value when Coker and Filon applied it to measuring stresses in machine parts. With one photograph and subsequent analysis, the stress in any planar model can be determined. By taking sections of a three-dimensional model, complete three-dimensional stresses can be found. Hence this effect is widely applied in industry. | 1. Photoelasticity of Crystals. Introduction.- 1.1. Discovery of the Phenomenon of Photoelasticity.- 1.2. Mathematical Formulation and Neumann's Constants. Pockels' Contribution.- 1.3. A Brief Historical Survey.- 1.3.1. Amorphous Solids.- 1.3.2. Cubic Crystals.- 1.3.3. Uniaxial and Biaxial Crystals.- 2. Mathematical Tools, Tensor Properties of Crystals, and Geometrical Crystallography.- 2.1. Linear Transformations.- 2.1.1. Coordinate Transformations.- 2.1.2. Orthogonality Relations.- 2.1.3. The Determinant of the Matrix [?ij] of the Direction-Cosine Scheme.- 2.2. Matrix Algebra.- 2.2.1. Introduction.- 2.2.2. Matrix Algebra and Coordinate Transformations.- 2.2.3. Some Common Types of Matrices.- 2.2.4. Orthogonal Matrix.- 2.2.5. Matrix Operators and Transformation of Tensor Components.- 2.2.6. The Diagonalization of a Matrix.- 2.3. Vectors and...

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