
Transparent Ceramics: Materials, Engineering, and Applications

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Hardcover

978-1-119-42949-4

March 2020

Pre-order

\$175.00

DESCRIPTION

This book covers ceramic materials which can be fabricated into bulk transparent parts. The book starts with an introduction to transparent ceramics (TCs) and conveys the rationale and goals of the book and the factors (technical and economical) which determine the overall worth of the TCs. A short description of transparency evolution, along ceramics history is also given. The book also provides a chapter devoted to the basics of electromagnetic radiation (EMR) interaction with matter, a necessary support for understanding the transparency of TCs, so as to make possible a correct understanding of the notion of "transparency" and how it is correlated with the physical processes which control it (reflection, refraction, scattering and absorption).

The book details the various applications of passive and active TCs including their use in Q-switches and gain-media, for laser systems, materials for solid state lighting sources, armor, scintillators, IR windows, IR heat seeking devices for missile guidance systems, IR night vision devices, optical lenses and artificial gems. The book also covers the future prospects and challenges in the field. Wherever possible, the data presented are explained, in correlation with the theoretical science and engineering background introduced together with the data.
