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“PEROVSKITES AND OTHER FRAMEWORK STRUCTURE MATERIALS
(2D-perovskites, Aurivillius, Ruddlesden-Popper, Dion-Jacobson phases,
tungsten bronzes, clays, and others)

New trends and perspectives”

(editors **P. Saint-Grégoire** and **M.B Smirnov**)

Is a collective volume written by about **70 authors**, containing more than 800 pages and **26 chapters** on recent developments and hot subjects, divided into two parts:

A. Fundamental aspects and general properties

B. Elaborated materials and applied properties

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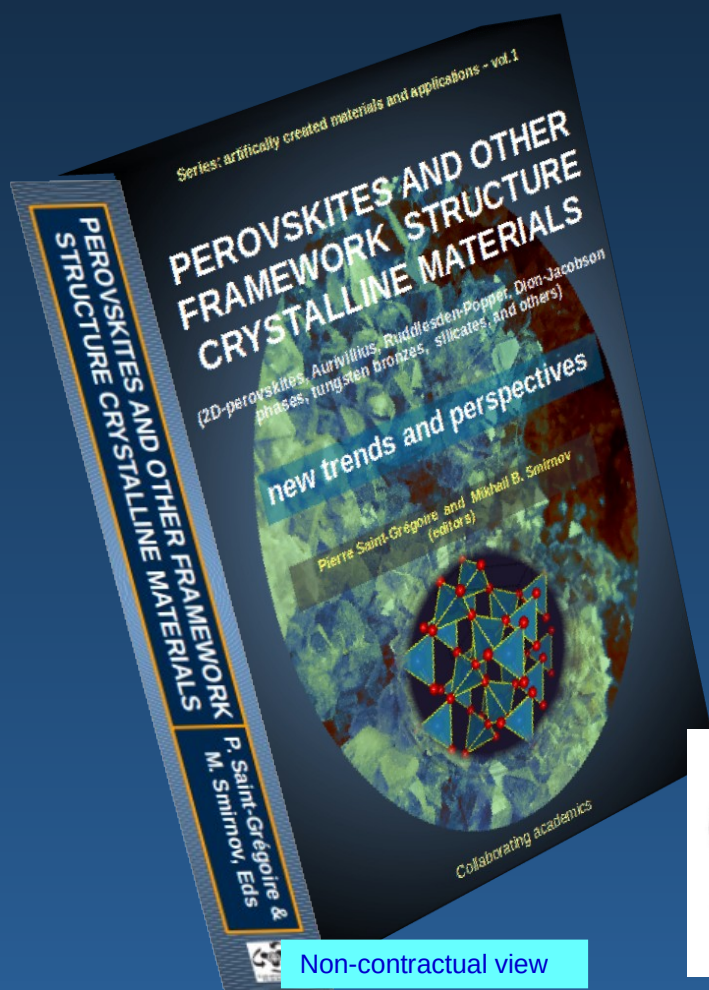
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Non-contractual view



#materials-science #physics
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Collaborating Academics

Perovskites are among the most famous materials due to their exceptional properties: they present nearly all existing types of interesting properties, in particular as ferroics or multiferroics, they may be insulators, (super)conductors, or semiconductors, magnetoresistant, they are used in numerous devices, they present hundreds of variants and different crystalline phases and phase transitions, and recently appeared as probably the most promising materials for photovoltaics. With a crystal structure characterized by octahedra that share their corners, these materials belong to the wider category of « *Framework Structure (FWS) materials* » the structure of which is based on units (octahedra, tetrahedra, ...) that share some of their corners (or edges) with their neighbours. This particular feature of FWS materials confers to them unique properties. This review volume is constituted of 26 chapters on different aspects, and is divided in two parts, « *Fundamental aspects and general properties* », and « *Elaborated materials and applied properties* ». Its main purpose is to attempt to identify the properties common to all members of the vast family of FWS materials, and understand their differences. Besides perovskites, derived compounds as 2D perovskites, Dion-Jacobson, Ruddlesden-Popper, Aurivillius, tungsten-bronzes, and others, are presented, and their preparation and/or properties as single crystals, ceramics, thin films, multilayers, nanomaterials, nanofibers, nanorods, etc, are discussed. We focus on new trends and important recent developments by leaving somewhat aside more classical aspects which can be easily found in older textbooks or review articles. Among most recent applications, this volume focuses on applications related with interactions with other molecules, on photovoltaics, and on memories, with a special attention to perovskite solar cells that have certainly attracted the most attention of researchers in recent years, opening extremely promising routes in photovoltaics.

In conclusion, this book presents a collection of texts elucidating various aspects of the relation between structural organization (including dynamical aspects) and singular properties of framework crystals; it proposes a reasonable balance between experimental and theoretical results, and between fundamental aspects and applied properties.

This volume can be approached on several levels (each chapter initially assumes that the reader is not a specialist in the subject, and is presented in a pedagogical way) : it is accessible to master or doctoral students, as well as to researchers who want to have informations on recent developments, who will find excellent detailed introductions up to hot subjects. It may also be used by undergraduate students who should approach given subjects. The volume contains 800 pages written by about 70 authors from different countries, it has an index, and is completed by numerous figures to illustrate the text.



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