



Editorial

Universitat Politècnica  
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## STRUCTURAL MODELS OF INORGANIC CRYSTALS FROM THE ELEMENTS TO THE COMPOUNDS

**Ángel Vegas**

Commonly accepted, the conventional ionic model has not been able to either describe or understand why the inorganic compounds adopt the structures they have. In this book, the author exposes the limitations of the ionic model and proposes new concepts like the *Relation between Oxidation and Pressure* and the *Extended Zintl-Klemm Concept* applied to cation arrays in oxides. These new concepts combined with the O'Keeffe and Hyde's model, the Hoffmann's isolobality concept, and the equivalence between electron pairs and anions allows us to obtain a much deeper understanding of inorganic structures. The extensive data on inorganic compounds discussed along the text allows us to describe the structures of oxides as "*real stuffed alloys*" in which the structures of the constituent elements or alloys survive under the oxygen matrix of the oxides. *Elemental structures are, then, the key to understand more complex structures.* Moreover, the pressure exerted by oxygen atoms, as well as the opposite role of temperature and pressure on the cation subarrays, helps to rationalize many chemically-, temperature- and pressure-induced structural phase transitions.

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### About the author

Ángel Vegas Molina graduated in Chemistry in 1970 at the Complutense University of Madrid, where he also earned his Ph. D. in Chemistry in February 1975. After performing postdoctoral stages at the CNRS in Grenoble (France) and at the University of Düsseldorf (Germany), he earned in 1978 a permanent researcher position at CSIC in Madrid (Spain) joining first the Institute of Inorganic Chemistry "Elhúyar" and later the Institute of Physical Chemistry "Rocasolano". Afterwards, Dr. Vegas made several research stays at the Technische Hochschule Darmstadt (Germany) in the 1980's, at the Max Planck Institute for Solid State Research in Stuttgart (Germany) in 2000, and

at the CNRS of Montpellier (France) in 2005. After his retirement in 2015, he joined the University of Burgos (Spain) as a Honorary Professor. Dr. Vegas has published more than 100 articles, 5 book chapters and has been editor of a volume in the prestigious collection "Structure and Bonding" (Springer). He has supervised 3 Ph. D. Thesis and has given Post-graduate courses in Spain, Venezuela, Argentina and Morocco.

