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Sommario/riassunto	Coatings based on hydroxyapatite and calcium phosphates have a significant relevance in several research fields, such as biomaterials, cultural heritage, and water treatment, due to their characteristic properties. Hydroxyapatite can easily accommodate foreign ions, which can either be incorporated into the lattice, thanks to its specific lattice characteristics, or be adsorbed onto its surface. All these substitutions significantly alter the morphology, lattice parameters, and crystallinity of hydroxyapatite so they influence its main properties. These ion substitutions can be sought or can derive from substrate contaminations, which is an important aspect to be evaluated. Finally, this capability can be used to obtain hydroxyapatites with specific properties, such as antibacterial characteristics, among others. For these reasons, the aim of this Special Issue is to document current advances in the field of ion-substituted hydroxyapatites and highlight possible future perspectives regarding their use. Contributions in the form of original articles and review articles are presented, covering different areas of application.