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Halide perovskites and related materials: A new playground of material discovery

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The last fifteen years have seen the most spectacular rise of a class of materials initially known as the hybrid halide perovskites, with the field quickly evolving to encompass all-inorganic halide perovskites and double perovskites, low-dimensional hybrid halide materials, and quantum dots. With intense worldwide research activities over the last decade, photovoltaic, light-emissive, and detection properties of this class of materials have reached superlative performance levels within this exceptionally short period and have taken the world by surprise. I shall discuss some historical aspects of this field of study, followed by some of our recent results to exemplify the excitement in this field in terms of discovering new materials and material properties. If time permits, I shall touch upon another exciting field comprising chiral systems where some of the systems can even be made ferroelectric.

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