Basic Properties of Point Defects in Wide-Band Gap Metal Halides, Oxides and Perovskites

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We present a short survey of the optical properties of primary radiation-induced point defects in alkali halides, simple oxides and some ABO₃ perovskites [1].We discuss in details the optical properties of single electron F and F^+ centers in rock-salt (f.c.c.) alkali halides and oxides and show that the Mollwo-Ivey law well-known for the F-type centers in alkali halides may be extended for other rock-salt structure insulators [2]. We also discuss the major differences in point defect production mechanisms in halides and oxides. We show that the Rabin-Klick diagram may be generalized for a whole family of alkali halides [2]. We discuss also the correlation between the temperatures at which hole polarons start migration in a series of alkali halides (fluorites, chlorides, bromides, iodides) and the lattice displacement around quasimolecule [3]. Finally,the F-type center migration and aggregation into metal colloids in alkali halides and oxides is also discussed [4,5].

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