

MANIFESTATION OF STRUCTURAL FEATURES
OF GARNETS IN THE RELAXATION KINETICS
OF PHOTOINDUCED PHENOMENA

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S u m m a r y

The relaxation kinetics of a long-lived addition to optical absorption, caused by the irradiation of the garnets $\text{NaCa}_2\text{Mn}_2\text{V}_3\text{O}_{12}$, $\text{Ca}_3\text{Mn}_2\text{Ge}_3\text{O}_{12}$ and $\text{Ca}_3\text{Ga}_{2-x}\text{Mn}_x\text{Ge}_3\text{O}_{12}$ with visible light, is explored and connected with the structure of garnets. A nontrivial character of the relaxation kinetics, common for all the garnets examined, is associated with their common structure element, viz., the anion group O_{12} forming the sublattice of oxygen ions O^{2-} . The relaxation kinetics observed mirrors the creation and motion of oxygen hole polarons in the oxygen sublattice, while the cation composition of garnets determines the hole hopping barrier varying in rather narrow limits. The role of the oxygen sublattice is convincingly corroborated by energy considerations.