

RADIATION DEFECTS IN CaF₂-CaO CRYSTALS

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By the time of 4 μs after the termination of electron bombardment there is the domination of V_k-absorption of color centers in spectrum of CaF₂-CaO-crystal at 295°K (fig. 1a, graph 1). In the range from 4 to 1 μs the absorption of V_k-centers and centers absorbing 3,1 eV (graph 2) disappears, which is hypothetically caused by perturbed (V_k) F-centers. Type and concentration of F_A-centers are the same.

There is not only local (dipole [O²⁻-V_a⁺]), but also nonlocal compensation of excess charge in CaF₂-CaO-crystals [1]. Though the question of origin of free anionic vacancies in CaF₂-CaO-crystals is left open.

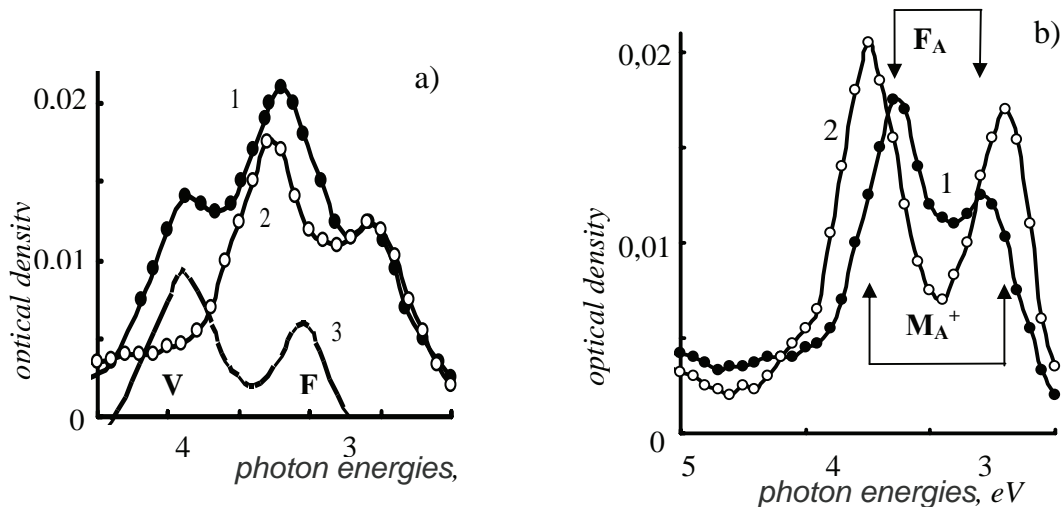
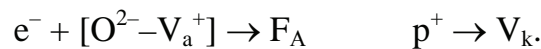


Fig. 1. CaF₂-CaO-absorption spectrums, measured at 295°K: a) after 4 μs (1) and 1 sec. (2) after irradiation, 3 – difference; b) after 1 sec. (1) and 6 sec. (2) after irradiation.

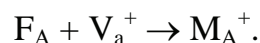
F_A and V_k-centers formation under the local compensation of impurity excess charge:



Formation of correlated F and V_k-centers under the nonlocal compensation:



That is inverse charge exchange of F-V_k-pairs to cause appearance of free anionic vacancies, that take part in the formation of complex electron centers like M_A⁺ (fig. 1b, graph 2):



[1] Chinkov E.P., Lisitsyna L.A., Reyterov V.M. Report at the all-USSR conference "Physics, chemistry and luminophor technology". 1989. Stavropol. Pt 2, p. 66.