смещения обусловлены следующими причинами: низкочастотный сдвиг полос поглощения есть проявление нефелоксетического эффекта, при котором из-за увеличения степени ковалентности связей Sm-F уменьшается межэлектронное взаимодействие в группировках SmF_6^{3-}. Еще одной причиной, влияющей на положение полос поглощения, может быть неодинаковое расщепление J-мультиплетов иона Sm(III) на штарковские компоненты в поле лигандов фтора.

Табл.1. Положение полос поглощения ионов Sm (III) в расплавленных фторидах щелочных металлов, $см^{-1}$

SLJ	LiF	NaF	KF	CsF
$^6F_{1/2}$, $^6F_{3/2}$,$^6H_{15/2}$,	6639	7125	6944	6623
$^6F_{7/2}$	8291	8338	8269	8133
$^6F_{9/2}$	9179	9613	9377	9673
$^4G_{5/2}$	16743	-		-
^{4}I11/2, 4I13/2	21573	21479	21573	-
6P3/2	23886	-	-	24663
4L15/2	25398	25267	-	-
6P7/2	26918	27125	27007	27095
4D5/2,6P5/2,4D1/2	28003	-	-	-
4H9/2, 4D7/2	29507	-	-	-
4G9/2	30431	-	-	-
4P3/2	31889	-	31181	-
4P5/2	33077	-	-	-
$^4I_{9/2}$, $^4F_{9/2}$		34838	-	-

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STUDY OF DOMAIN PATTERNING IN MgO DOPED LITHIUM NIOBATE SINGLE CRYSTALS BY ELECTRON BEAM IRRADIATION

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The domain formation by electron beam irradiation of MgO doped congruent lithium niobate crystals (MgOLN) covered by resist layer has been studied both ex-

perimentally and by computer simulation. The periodical domain patterns have been produced and second harmonic generation (SHG) has been demonstrated.

The irradiation of polar surfaces was performed by scanning electron microscope (Auriga Crossbeam workstation, Carl Zeiss) with electron-beam lithography system (Elphy Multibeam, Raith) using dot, line and stripe exposure regimes. The opposite surface covered by solid Ta electrodes was grounded. The irradiated Z^- surface was covered by resist layer. The domain patterns revealed by selective chemical etching were visualized by several methods: optical microscopy, piezoresponse force microscopy, scanning electron microscopy and confocal Raman microscopy.

The dot exposure of Z^+-surface led to formation of the stable needle-like domains with lateral size about 2 μm and length above 200 μm at 100-nm-distance from the surface. For linear exposure the domain geometry changed with the increase of the dose from the chain of isolated domains with average size about 200 nm and period about 800 nm to comb-like structure as a result of domain merging. The main stages of domain structure evolution were revealed. The mechanism of domain appearing and growth under the field produced by space charge was proposed and explained in terms of kinetic approach [1]. The domain growth along polar direction has been attributed to electrostatic interaction of elementary steps existing on the charged domain wall [2].

The domain formation on Z^--surface for MgOLN crystals covered by resist has been studied experimentally and by computer simulation [3]. It was shown that the pattern quality depends on the resist thickness and electron energy. The measured dependencies of domain size on dose were revealed and used for optimization of the poling process. SHG of green light has been demonstrated for the domain structure with period of 6.89 μm. The high homogeneity of the periodical poling was confirmed by achieved efficiency of SHG, which was significantly higher than for conventional electric-field poling.

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