Conclusions

1. Oscillation properties of Dy\textsuperscript{3+} doped lead thiogalite crystal co-doped with Na\textsuperscript{+} ions were investigated under flashlamp and LD pumped 1.318 µm YAG:Nd\textsuperscript{3+} laser pumping.
2. Na\textsuperscript{+} co-doping for Dy\textsuperscript{3+} ions excessive charge compensation resulted in higher dysprosium ions concentration in the grown crystals.
3. Cascade oscillations at $^{5}D_{4} \rightarrow ^{7}F_{1}$ and $^{5}D_{4} \rightarrow ^{7}F_{2}$ transition was realized with observed oscillating wavelengths of 5.4 µm, 4.65 µm, 4.5 µm, 4.3 µm.
4. The influence of pump pulse duration on lasing properties of self-terminated $^{5}D_{4} \rightarrow ^{7}H_{11/2}$ laser transition was investigated and output saturation for pump pulse durations exceeding 3 ms was observed.
5. Under excitation by flashlamp pumped YAG:Nd\textsuperscript{3+} (λ=1.318 µm) laser the output energy up to 16 mJ with slope efficiency of 4% was obtained.
6. Under excitation by LD pumped YAG:Nd\textsuperscript{3+} (λ=1.318 µm) the output energy up to 90 µJ with slope efficiency of 3.2% was obtained.