EuroSciCon

May 09-10, 2019
Stockholm, Sweden

EuroSciCon Joint Event on
Laser Optics,
Quantum & Plasma Physics

J Electr Eng Electron Technol 2019, Volume:8
DOI: 10.4172/2325-9833-C1-015

OPTIMAL CO2 LASER SYSTEM DESIGN FOR $^{11}BCL_3$ EXCITATION BY THE METHOD OF SELECTIVE LASER ASSISTED RETARDATION OF CONDENSATION

K A Lyakhov[1], A N Pechen[2] and H J Lee[1]

[1]Jeju National University, South Korea
[2]Department of Mathematical Methods for Quantum Technologies-Steklov Mathematical Institute, Russia

Efficiencies of selective excitation of all or one of four chlorine isotopologues of $^{11}B^{35}Cl_n{}^{37}Cl_{3-n}$ by multi-line single pulse, pulse by pulse (each pulse line is chosen accordingly to chlorine isotopologue, being excited), and continuous wave excitations within the method of selective laser assisted retarded condensation (SILARC) were compared. To carry out this task, a new formula for multi-line excitation rate was derived. Result of our simulations for multi-line laser pulse shape is shown in the Fig.1. In order to excite boron isotopes efficiently in each case, CO_2 laser system was specifically designed. Optimal design criterion was introduced as a minimum of laser medium pumping rate provided that isotope separation rate is at its maximum.

lyakhov2000@yahoo.com

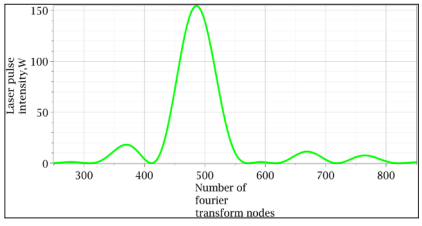

Figure 1: First laser pulse time evolution inside resonator as a function of discrete Fourier-transform node number, corresponding to physical parametrization considered. Appropriate time interval can be restored from the pulse number (n=1..Np(int)) and node number (m=1..Nf) as t =(n-1)Tp + (m-1)tmin, where tmin = tmax/(Nf -1), Nf = 210, and Np(int) = 43