SOLID HYDROGEN RAMAN SHIFTER FOR MID-INFRARED RANGE (4.4 – 8 μm)

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We have developed a pulsed continuously tunable laboratory laser source for the mid-infrared spectral range of 4.4 – 8 μm, having a spectral line width of 0.4 cm^{-1}. The device is based on the backward stimulated Raman scattering (SRS) of the focused near-infrared (1.56 – 1.85 μm) laser beam in solid *para*-hydrogen at T = 4 K. The output energies range from 1.7 mJ at 4.4 μm to 120 μJ at 8 μm, which corresponds to SRS quantum efficiencies ranging from 0.53 to 0.17, respectively.