In this paper, a multifunctional Ti:Sapphire femtosecond laser complex based on a titanium sapphire crystal containing a femtosecond generator, a regenerative amplifier, an optical parametric amplifier, a scheme for generating a difference frequency and allowing to obtain tunable pulses in the range from 3 to 10 μm with an energy of up to 5 μJ and a duration of 60 to 80 fs was implemented. Using these pulses, a scheme of two-dimensional infrared spectroscopy was created using a phase-sensitive technique for monitoring the time delay between the probing pulses with a scanning accuracy of 0.5 fs. The spectral resolution of the two-dimensional spectroscopy method is 7 cm^{-1} in the region of characteristic molecular oscillations from 1500 to 2500 cm^{-1}. Test experiments with samples of molybdenum hexacarbonyl were carried out.