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标题: Upgrading the sensitivity of spectroscopy gas analysis with application of supersonic molecular beams
作者: Vaks, V (Vaks, V.); Domracheva, E (Domracheva, E.); Sobakinskaya, E (Sobakinskaya, E.); Chernyaeva, M (Chernyaeva, M.)
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摘要: We propose an approach to increase a sensitivity of microwave and THz spectroscopy, that involves application of supersonic molecular beams. The key advantage offered by such an approach is that a gas temperature can be decreased along with an increase in the gas density, which results in a much greater number of molecules interacting with radiation and, hence, in a higher absorption coefficient. This effect has been demonstrated experimentally on supersonic CO and NO beams, using a phase manipulation microwave spectrometer. The absorption coefficient was found to be three orders of magnitude higher than the value of gas absorption coefficient in a standard 1-m long cell at room temperature. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3699053]
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地址: [Vaks, V.; Domracheva, E.; Sobakinskaya, E.; Chernyaeva, M.] Inst Phys Microstruct RAS, Nizhnii Novgorod, Russia
通讯作者地址: Sobakinskaya, E (通讯作者),Inst Phys Microstruct RAS, GSP-105, Nizhnii Novgorod, Russia
电子邮件地址: katja@ipm.sci-nnov.ru
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