HITRAN2012. Part I: Overview

L. S. Rothman[a], I. E. Gordon[a], HITRAN contributors and validators[b]

[a] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge MA 02138, USA
Tel.: +1 617-495-7474, E-mail: lrothman@cfa.harvard.edu, igordon@cfa.harvard.edu
[b] International HITRAN Institute

The HITRAN2012 database has recently been released [1].

The assembly of the HITRAN database traditionally exemplifies the necessity and efficiency of a worldwide scientific collaboration. It is a remarkable effort of experimentalists, theoreticians and atmospheric scientists who measure, calculate, and validate the HITRAN data. The line-by-line lists for almost all of the 42 HITRAN molecules were updated with respect to the previous compilation (HITRAN2008 [2]). The extent of the updates ranges from corrections to the representations of quantum assignments to complete replacements of the lists and introduction of new isotopologues. Also, five new molecules, namely, C_4H_2, HC_3N, H_2, CS and SO_3 were added to the database. The HITRAN2012 database now provides alternative line-shape representations for a number of molecules, whereas previous editions of database provided parameters only for the Voigt profile. Cross-sectional data also underwent substantial updates and additions. Finally, a new section for collision-induced absorption data was added to the database. The new edition of the database is a substantial step forward to improve retrievals of atmospheric constituents in comparison with previous editions. This poster will provide an overview on what is included into the 2012 compilation of HITRAN.

The HITRAN database is supported by the NASA Earth Observing System (EOS) under the grant NAG5-13524.

[1] L.S. Rothman, I.E. Gordon, Y. Babikov, A. Barbe, D. Chris Benner, P.F. Bernath, M. Birk, L. Bizzocchi, V. Boudon, L.R. Brown, A. Campargue, K. Chance, E.A. Cohen, L.H. Coudert, V.M. Devi, B.J. Drouin, A. Fayt, J.-M. Flaud, R.R. Gamache, J.J. Harrison, J.-M. Hartmann, C. Hill, J.T. Hodges, D. Jacquemart, A. Jolly, J. Lamouroux, R.J. Le Roy, G. Li, D.A. Long, O.M. Lyulin, C.J. Mackie, S.T. Massie, S. Mikhailenko, H.S.P. Müller, O. V. Naumenko, A.V. Nikitin, J. Orphal, V. Perevalov, A. Perrin, E.R. Polovtseva, C. Richard, M.A.H. Smith, E. Starikova, K. Sung, S. Tashkun, J. Tennyson, G.C. Toon, V.G. Tyuterev, G. Wagner, "The HITRAN2012 molecular spectroscopic database," *JQSRT* **2013**, http://dx.doi.org/10.1016/j.jqsrt.2013.07.002 .

[2] L.S. Rothman, I.E. Gordon, A. Barbe, D. Chris Benner, P.F. Bernath, M. Birk, V. Boudon, L.R. Brown, A. Campargue, J.-P. Champion, K. Chance, L.H. Coudert, V. Dana, V.M. Devi, S. Fally, J.-M. Flaud, R.R. Gamache, A. Goldman, D. Jacquemart, I. Kleiner, N. Lacome, W.J. Lafferty, J.-Y. Mandin, S.T. Massie, S. Mikhailenko, C.E. Miller, N. Moazzen-Ahmadi, O.V. Naumenko, A. Nikitin, J. Orphal, A. Predoi-Cross, V. Perevalov, A. Perrin, C.P. Rinsland, M. Rotger, M. Šimecková, M.A.H. Smith, K. Sung, S. Tashkun, J. Tennyson, R.A. Toth, A.C. Vandaele, J. Vander Auwera. "The HITRAN 2008 molecular spectroscopic database," *JQSRT* **2009**, 110, 532.