

This data is from the paper titled "Infrared Band Strengths of Molecular Oxygen in Astrophysical Ices" published in The Planetary Science Journal

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The data files are for:

Figure 1. Example of using MCMC to fit the Fresnel equations to a UV-Vis reflectance spectrum

Figure_1-UV_Vis.txt - first column is wavelength (nm) and the second column is reflectance

Figure_1-MCMC_Fresnel_Fit.txt - first column is wavelength (nm) and the second column is the best fit reflectance

Figure 2. Example of measuring the band strength from a Beers Law plot

Figure_2-Example_Beers_Law_Data.txt - first column is the O₂ column density (10^{18} O₂ cm⁻²) and second column is the O₂ band area (cm⁻¹).

Figure_2-Example_Beers_Law_Fit.txt - first column is the O₂ column density (10^{18} O₂ cm⁻²) and second column is the O₂ band area (cm⁻¹) of the linear best fit ($y = 0.02181 x + 0.00204$).

Figure 3. Example spectra of a ~ 1:1 O₂ + H₂O mixture at different thicknesses

Figure_3-O₂_H₂O_Spectra.txt - first column is wavenumber (cm⁻¹), second through eighth columns are spectra of the sample at the following thicknesses (in nm): 61, 330, 465, 734, 1005, 1141, and 1275. These spectra have not been vertically offset (as we do in the paper).

Figure 4. Example spectra of a ~ 1:1 O₂ + CO₂ mixture at different thicknesses

Figure_4-O₂_CO₂_Spectra.txt - first column is wavenumber (cm⁻¹), second through eighth columns are spectra of the sample at the following thicknesses (in nm): 64, 450, 857, 963, 1472, 1729, and 2114. These spectra have not been vertically offset (as we do in the paper).

Figure 5. Example spectra of a ~ 1:1 O₂ + CO mixture at different thicknesses

Figure_5-O₂_CO_Spectra.txt - first column is wavenumber (cm⁻¹), second through eighth columns are spectra of the sample at the following thicknesses (in nm): 70, 444, 818, 1065, 1564, 1689, and 1939. These spectra have not been vertically offset (as we do in the paper).

Figure 6. Measured density for pure H₂O, CO₂, and CO ices and binary mixtures of O₂ with H₂O, CO₂, and CO at 15 K

Figure_6-Density_O₂_H₂O.txt - first column is the O₂ concentration

$(100 * O_2 / (O_2 + H_2O))$), the second column is the error in the concentration, the third column is the density (g/cm^3), and the fourth column is the error in the density

Figure_6-Density_O2_CO2.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO_2)$), the second column is the error in the concentration, the third column is the density (g/cm^3), and the fourth column is the error in the density

Figure_6-Density_O2_CO.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO)$), the second column is the error in the concentration, the third column is the density (g/cm^3), and the fourth column is the error in the density

Figure 7. Measured refractive index (at 500nm) pure H₂O, CO₂, and CO ices and binary mixtures of O₂ with H₂O, CO₂, and CO at 15 K

Figure_7-Refractive_Index_O2_H2O.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + H_2O)$), the second column is the error in the concentration, the third column is the refractive index at 500 nm, and the fourth column is the error in the refractive index

Figure_7-Refractive_Index_O2_CO2.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO_2)$), the second column is the error in the concentration, the third column is the refractive index at 500nm, and the fourth column is the error in the refractive index

Figure_7-Refractive_Index_O2_CO.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO)$), the second column is the error in the concentration, the third column is the refractive index at 500nm, and the fourth column is the error in the refractive index

Figure 8. Measured O₂ band strength (A') for binary mixtures of O₂ with H₂O, CO₂, and CO

Figure_8-Band_Strength_O2_H2O.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + H_2O)$), the second column is the error in the concentration, the third column is the O₂ Band Strength (10^{-20} cm molecule⁻¹), and the fourth column is the error in Band Strength

Figure_8-Band_Strength_O2_CO2.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO_2)$), the second column is the error in the concentration, the third column is the O₂ Band Strength (10^{-20} cm molecule⁻¹), and the fourth column is the error in Band Strength

Figure_8-Band_Strength_O2_CO.txt - first column is the O₂ concentration ($100 * O_2 / (O_2 + CO)$), the second column is the error on the concentration, the third column is the O₂ Band Strength (10^{-20} cm molecule⁻¹), and the fourth column is the error in the Band Strength

Columns are tab delimited, with a single row descriptive header. Files are best read by importing into Excel, Origin Pro, or similar software.