

Physikalische Chemie III für Lehramt

Übungsblatt 5

(26.05.2023)

Besprechung 01.06.2023

Complete the remaining exercises from Übungsblatt 4. The Google Colab notebook that we started creating is here: https://colab.research.google.com/drive/1s8qJxWu44ovX3kN5c_OZWvRSx8EXvF8C?usp=sharing

1 Force constants of covalent bonds from vibrational spectroscopy

The following data on the infrared absorption wavenumbers of molecules are taken from “Spectra of diatomic molecules”, G. Herzberg, van Nostrand (1950):

molecule	wavenumber (cm^{-1})	force constant (N/m)
H^{35}Cl	2990	
H^{81}Br	2650	
H^{127}I	2310	
CO	2170	
NO	1904	

Calculate the force constants of the bonds and arrange them in order of increasing stiffness.