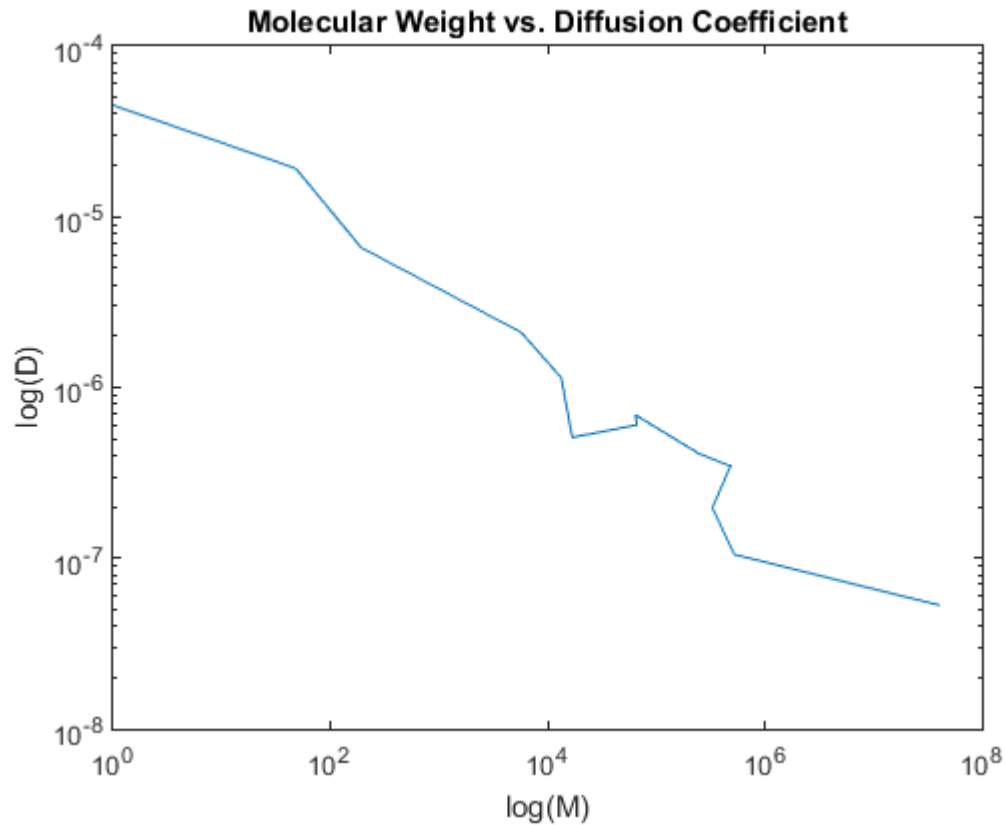


1.

We consider the table of molecular weights and diffusion coefficients. Our rule of thumb for computing D from M is $D \approx M^{-1/3}$. Plotting the table on a log-log plot yields the result below.



We note that the plot is linear with values decreasing as M increases, as expected. Given that we can assume the data is proportional by the rule of thumb, we consider a line of best fit to be of the form,

$$D = \beta_1 M^{-\frac{1}{3}} + \beta_2$$

Using a linear fitting method, I determined the coefficients to be,

$$\beta_1 \approx 4.779 \times 10^{-5}$$

$$\beta_2 \approx 1.399 \times 10^{-7}$$

Plotting the resultant line over the data yields the following result; which, from a purely visual inspection seems to support the rule of thumb as being accurate.

