Notebook

January 24, 2020

NBBinder test on a collection of notebooks about some thermodynamic properperties of water

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1 Reading the Data

A table with the variation of density and viscosity in terms of the temperature, at a fixed pressure of 1 atmosphere, is available in Batchelor (2000). The data has been digitized and saved into a local csv file. Here we load the table from the file and view and plot the data.

1.1 Importing the libraries

First we import the libraries used in this particular notebook.

```
[1]: import pandas as pd import matplotlib.pyplot as plt
```

1.2 Using pandas

The data has been digitized to the local file water.csv. An easy way to retrieve it is with the pandas.read csv() function of the pandas library:

```
[2]: water_pd = pd.read_csv('water.csv', header=[0,1])
```

1.2.1 Viewing the data with pandas

The data is diplayed nicely with pandas:

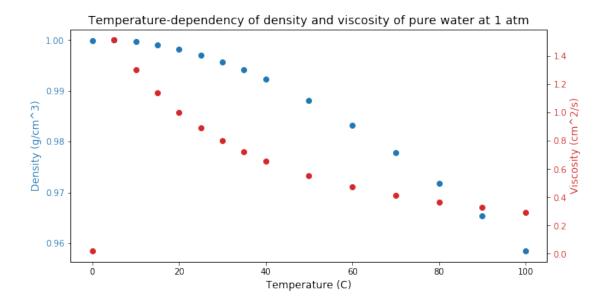
```
[3]: water_pd
```

[3]: temp density viscosity
Temperature (C) Density (g/cm^3) Viscosity (cm^2/s)

0	0	0.9999	0.01787
1	5	1.0000	1.51400
2	10	0.9997	1.30400
3	15	0.9991	1.13800
4	20	0.9982	1.00400
5	25	0.9971	0.89400
6	30	0.9957	0.80200
7	35	0.9941	0.72500
8	40	0.9923	0.65900
9	50	0.9881	0.55400
10	60	0.9832	0.47500
11	70	0.9778	0.41400
12	80	0.9718	0.36600
13	90	0.9653	0.32700
14	100	0.9584	0.29500

1.2.2 Plotting the data

We may also visualize both variations of density and viscosity using matplotlib.pyplot:



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