

Lecture 23 - Integrating Excel & Python

* Prayer / Quiz / AMA

±. Macros & VBA.

* Sometimes you want to automate a task in Excel.

You can do this by recording a macro.

* Macros are actually computer-written code

in a language called "Visual Basic for Applications" or VBA for short.

- Visual Basic is a programming language written & maintained by Microsoft. VBA is a form of Visual Basic used for writing macros inside MS Office.

- VBA can be used to edit macros after they are recorded.

- VBA can be used to write functions and subroutines. This makes Excel more powerful!

- I have a handout on the web of some basic VBA syntax.

Activity

* Enable Macros:

See file:

Toluene - Heat -

Capacity.xlsx

- File → Options → Customize Ribbon → ☒ Developer

- Save sheet as a .xlsm (macro-enabled workbook)

* Edit VBA code

- Access from Developer Ribbon → "Visual Basic" Button
- Access by "editing" a macro
- write a "trapz" function that uses the trapezoidal rule to do a quadrature of the $C_p(T)$ data to find an enthalpy.

* Student Practice

- write a "dot" function to take the dot product of two arrays.

II. Calling Excel in Python

- * Sometimes you have something that is hard to do in Excel or python alone. The "xlwings" module allows you to have an interface between both of them (only for mac/windows).

- * I have a handout on the web of some basic xlwings syntax.

Activity

See files:

Toluene Heat Capacity.xlsx

xlwings.py

- * Import xlwings, get/push data from/to Excel, make plots, etc.
- * Calculate the quadrature using the trapezoidal rule
- * Fit a cubic spline to the $C_p(T)$ data. Plot it? import it into Excel.

* Student Practice :

- write a function that takes the dot product of A & B .