

# Practical 6

## Working with Spreadsheet in MATLAB

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### Working with Spreadsheet in MATLAB

- Importing the Microsoft Excel file “ree.xlsx” in MATLAB
- Storing the Element list in a column vector **elem**
- Storing the Mineral list in a row matrix **minrl**
- Storing the Composition data in a two dimensional matrix **data**
- Manipulating the **data** matrix for desired computations

2<sup>nd</sup> Lecture

## Spreadsheet Layout

	A	B	C	D	E	F
1	element	chondrite	arc theolite	alkali basalt	nor_arctholeite	nor_alkalibasalt
2	La	0.33	56	5.28	2.23	1.20
3	Ce	0.88	105	14.96	2.08	1.23
4	Pr	0.112	12.32	1.68	2.04	1.18
5	Nd	0.6	60	12	2.00	1.30
6	Sm	0.181	12.67	3.44	1.85	1.28
7	Eu	0.069	0.138	1.04	0.30	1.18
8	Gd	0.249	4.5	3.98	1.26	1.20
9	Tb	0.047	0.517	0.85	1.04	1.26
10	Ho	0.07	0.42	1.12	0.78	1.20
11	Er	0.2	1.2	3	0.78	1.18
12	Tm	0.03	0.09	0.42	0.48	1.15
13	Yb	0.2	0.4	3.4	0.30	1.23
14	Lu	0.034	0.04	0.54	0.07	1.20

## Importing Excel Spreadsheet in MATLAB

*Specialized Command in MATLAB to access, read and write in Spreadsheets.*

Requires Microsoft Excel program to be installed in the computer.

Supported File Types:

\*.xls, \*.xlsx, \*.xlsm, \*.xml, \*.xlsb

and other Excel supported file types.

Command

xlsinfo : Determines if the file contains Microsoft Excel Spreadsheet.

Syntax:

***[file\_type, sheets, file\_format] = xlsinfo('filename')***

***>> [ftype, desc, ffmt] = xlsinfo ('ree.xlsx')***

## Importing Excel Spreadsheet in MATLAB

Command

xlsread : Read Microsoft Excel Spreadsheet file

Syntax:

***[num, text, raw] = xlsread('filename')***

***[num, text, raw] = xlsread('filename', sheet)***

***[num, text, raw] = xlsread('filename', sheet, range)***

***>> [data, text, raw] = xlsread ('ree.xlsx');***

***SEE WORKSPACE for the newly created matrix 'data' and cell arrays 'text' and 'raw'***

## Working with Excel Spreadsheet Data in MATLAB

Exercise:

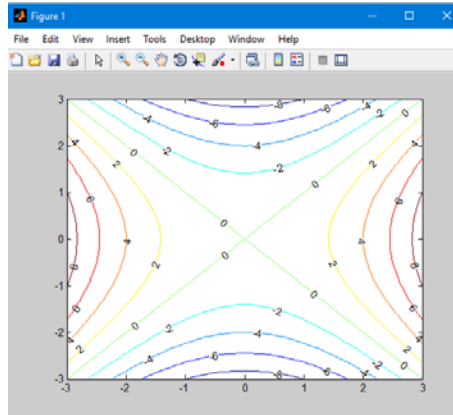
After importing the numerical data from Excel Spreadsheet into MATLAB, and the Text Cell Array, Do the following:

1. Extract a Row Matrix of Mineral names from **text** cell array into **minrl** matrix
2. Extract a Column Vector of Element symbols from **text** cell array into **elem** vector
3. Using **data** matrix, do the following:
  - i. Extract all values from column 1
  - ii. Extract value from column 1 from row 2 to end
  - iii. Extract only the selected values from column 4. From row 3 to row 8
  - iv. Extract all values from row 10
  - v. Extract all values in a single column
  - vi. Extract all values in a single row
  - vii. Convert the value of Column 1 to log of Column 1
  - viii. Calculate the average from Column 2 and 5

## Preparation of Plain Contour Map

```
>> [a,b] = meshgrid(-3:0.1:3,-  
3:0.1:3);  
>> c = (a.^2-b.^2);  
>> contour(a,b,c)  
>> contour(a,b,c,25)  
>> [C,h] = contour(a,b,c);  
>> clabel(C,h)
```

Replace **contour** command with **contourf** and note the difference



## Preparation of 3D Contour Map

```
>> [a,b] = meshgrid(-3:0.1:3,-  
3:0.1:3);  
>> c = (a.^2-b.^2);  
>> contour3(a,b,c,25)
```

Replace **contour3** command by **surf** and see the difference

