Experiment -4

Title: *Write a Program to Plot hardness data with error bar*

In previous laboratory the hardness data vs grain size were plotted. The data were fit with a linear equation. The slope of the equation was taken to be the locking parameter and the intercept to the y-axis was taken to be the friction stress. Each hardness had deviations associated with it. In this lab the deviation are plotted as error bar.

Given:

Grain sizes and Hardness values for BCC iron (*Scripta Mater. et. Metall. Vol. 24, p1599-1604*)

Grain size (nm)	Hardness
3000	216 ± 20
60	431 ± 50
29	583 ± 50
12	640 ± 30
5.5	733 ± 25
8.8	797 ± 30
8.5	878 ± 30
8.1	897 ± 30
7.4	933 ± 35
7.1	980 ± 35
6.0	1024 ± 35

Program

%Make arrays of Grain size (d) and Hardness (h).

For e.g.,

d=[3000 60 29 …… … 6];

h=[216 431 …. …1024];

%change d to inverse of the square root of d

d=d.^(-0.5);

err=[20 50 50 30 25 30 30 30 30 35 35 35];

errorbar(x,y,err);

xlabel(‘d^nm^-^0.5’)

ylabel(‘Hardness DPH’)

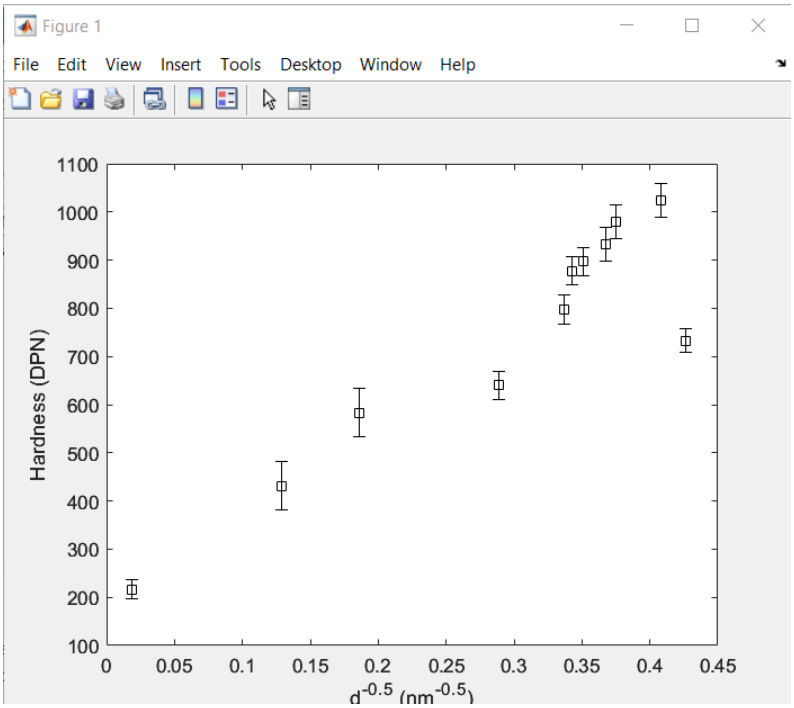
Using the fit tool in figure tool bar make a linear fit for the data

Change the font size and size of digits on both axis to Helvetica 14

The command title(‘’) at the end of the program. Insert your roll number in between the apostrophes. Do this for every figure.

Results

Figure



Conclusions:

Hardness with error bars is plotted against the grain size