In order to read your data use the command **imread**

A = **imread**('FILENAME','bmp')

This will create a 3-D (480 rows, 640 columns, 3 deep) array.

The command image(A) will display the snapshot associated with FILENAME.bmp. (Fig. 1)

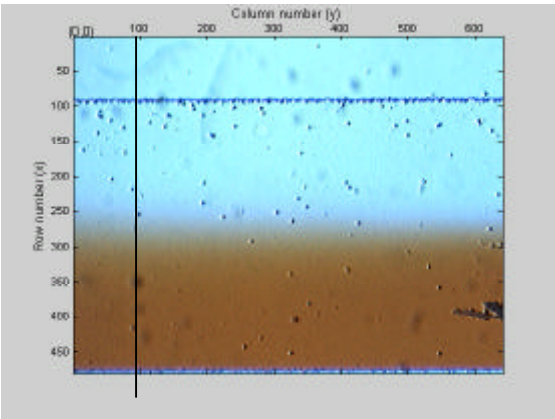

Fig.1 Snapshot at 3 mm down the channel (**image(A)**).
Superimposed vertical line indicates the axis
whose profile will be further analyzed.

You can choose to selectively display the red, green or blue components of the image by typing **image**(A(:,:,1)), **image**(A(:,:,2)) or **image**(A(:,:,3)) respectively.

The command **plot** will allow you to display single line profiles, much like the camscope software. You will need to specify the line index, for instance **plot**(A(:,100,3)) displays the blue profile along the axis defined by the line passing through the 100^{th} pixel on the y axis (Fig.2).

If you wish to do any operation on the profile, such as averaging, you must first convert the numbers to double precision format. To do this, use the command **double**.
Profile = **double**(A(:,100,3));
Average_Profile = (**double**(A(:,100,3)) + **double**(A(:,101,3))) / 2 will give you the average of two adjacent profiles.

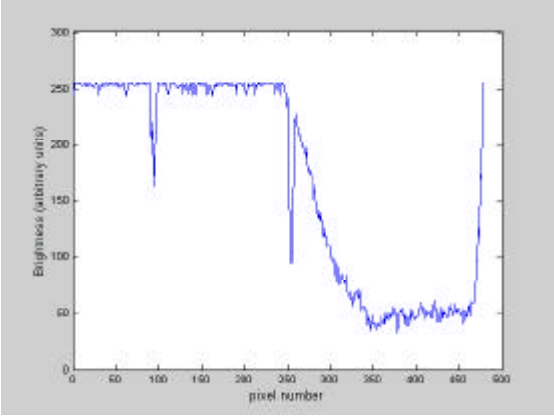

Fig. 2 Blue absorption profile along axis indicated in Fig. 1 (**plot**(A(:,100,3)))

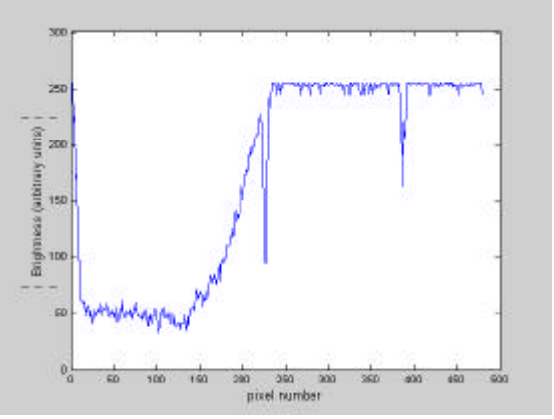

Fig. 3 Same as Fig.2 (**plot**(**flipud**(A(:,100,3))

The command "flipud" will allow you to reverse the x axis so you can plot the profile as an increasing function of distance.

plot(**flipud**(A(:,100,3) will yield Fig.3.

You will also find the function **erf** useful if you wish to compare the measured profile to the integral of a gaussian function.

120*(**erf**((x -200)/(**sqrt**(2)*10)) + 1) + 50 yields the integral of a gaussian distribution with ? = 200, ? = 10, amplitude = 120 and offset = 50.

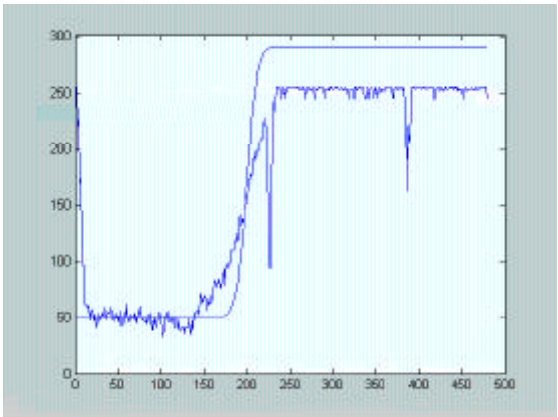

Fig. 4. Measured profile along with integral of gaussian distribution.