**Interactive version of MTEX plotGrains function, linked to EBSD Pole Figure**

This new grain map allows the user for easy access to crystallographic information by mouse-selection of the desired grains.

The function imitates the way other commercial EBSD software like Channel 5 and TSL work (grains are discretely selected) and has been checked with .ANG (exported from TSL) and .CTF (exported from Channel 5) file extensions. It has been used for the identification of crystallographic variants and prior austenite grain in bainitic steels.

1-Before you start: Some m-files are involved, you must save them in the following folders:

|  |  |
| --- | --- |
| FILE | DIRECTORY |
| plotgrainpluspf\_lucia.m  | (Current folder in MATLAB session ) C:\Program Files\MATLAB |
| plotGrains\_lucia | (Current folder in MATLAB session ) C:\Program Files\MATLAB |
| calcColorCode\_lucia | C:\Program Files\MATLAB\R2010b\MTEX\tools\plot\_tools |
| plotpdf\_lucia\_0 | C:\Program Files\MATLAB\R2010b\MTEX\geometry\@orientation |
| plotpdf\_lucia | C:\Program Files\MATLAB\R2010b\MTEX\geometry\@orientation |
| multiplot\_lucia\_1  | C:\Program Files\MATLAB\R2010b\MTEX\tools\plot\_tools |
| plot\_lucia\_2 | C:\Program Files\MATLAB\R2010b\MTEX\geometry\@vector3d |
| plot\_lucia\_3 | C:\Program Files\MATLAB\R2010b\MTEX\geometry\@S2Grid |

2-Import your EBSD data. Sometimes for the software to recognize the extension of your data, it may be necessary to close MATLAB and to open it again. If there is a huge amount of EBSD data, apply a filter or reduce the area of analysis, as it is explained in MATLAB Help, Modify EBSD data: Remove Inaccurate Orientation Measurements, Restricting to a region of interest.

4- Call the function to plot the grain map:

>>plotgrainpluspf\_lucia(ebsd, vecm, unindexed, phasename, minangleboundary)

; where ‘vecm’ is a vector having the indices of Miller of the plane you want to get its pole figure; ‘unindexed’ is the position in the MATLAB structure of the unindexed ‘phase’ (if there is no unindexed phase, type 0), ‘phase’ is the name of the objective phase or one of the objective phases, and minangleboundary is the minimum angle to define a grain boundary. Example:

For EBSD data like this:

Phase Orientations Mineral Symmetry Crystal reference frame

 0 180367 notIndexed

 1 23755 Iron bcc (old) m-3m

, if you want to obtain the ‘Iron bcc’ pole figure of the {1 1 0} plane of grains with an internal misorientation <5, type:

>> plotgrainpluspf\_lucia(ebsd, [1 1 0], 1, ‘Iron bcc’, 5)

5- A grain map is opened. Left-click on one grain; a window containing its Pole Figure will appear. Then you can select/deselect other grains. Be patient, it may take a few seconds. To see the Pole Figure at an appropriate scale, don’t forget to maximize its window.