```
%% load filteredtrackslists from
foldertracker_calibrationcurve_trackplotterresult select tracks
manually first by plotting tracks and noting the ones to be used in
the variable n

% tracks=filteredtrackslists;

% figure
% hold on
% for i=1%length(tracks)
%    plot ((tracks{i,1}(:,1)), (tracks{i,1}(:,4)))
% end


n=[1,2,3];


for i=1:length(n)
selectedtracks{i,1}=tracks{n(i),1};end

%plot selected tracks
figure
hold on
for i=1:length(selectedtracks);
   plot ((selectedtracks{i,1}(:,1)), (selectedtracks{i,1}(:,4)))
end

tracks=selectedtracks;

%% align curves in x by their crossing of 0 in y

%find zero positions in tracks
for i=1:length(tracks)
[zeropos] = knnsearch(tracks{i,1}(:,4),0);
zeropositions(i,1)=[zeropos];
end

%%substract zero z-coordinate value from z-positions and generate
updated trackslist

for i=1:length(tracks)
    newcoordinates=[(1-zeropositions(i,1)):((length(tracks{i,1}(:,
4)))-(zeropositions(i,1)))]';
    tracks{i,1}(:,5)=newcoordinates;
end

%redefine z-axis
for i=1:length(tracks)
    tracks{i,1}(:,5)=( ((tracks{i,1}(:,5))*0.01));
end
```

```
%plot aligned raw data
figure
hold on
for i=1:length(tracks)
   plot ((tracks{i,1}(:,5)), (tracks{i,1}(:,4)))
end


%% make list of points for each x-position (group x values instead of
track identity)

%generate long list for scatter fitting
allpoints=vertcat(tracks{:});
WH=allpoints(:,4);
z=allpoints(:,5);
[z_sorted, sortIDX]=sort(z);
WH_sorted=WH(sortIDX);
z_WH=[z_sorted,WH_sorted];


% scatterplot all points
figure
scatter(z_WH(:,1),z_WH(:,2));



%% calculate median and std and plot

% make cell array with each array representing one z-step
z_WH(:,1)=z_WH(:,1)+2;

zsteparray=cell(400,1);

for i=1:length(z_WH)
    cellnumber=uint16((z_WH(i,1)/0.01)+1);
    zsteparray{cellnumber,1}=[zsteparray{cellnumber,1};z_WH(i,2)];

end

% calculate median for each z-step
clear meanlist
for i=1:length(zsteparray)

    if isempty(zsteparray{i,1})==1

    else
    meanlist(i,1)=mean(zsteparray{i,1}(:,1));
    end
end
```

```
% calculate STD for each z-step
clear stdlist
for i=1:length(zsteparray)

    if isempty(zsteparray{i,1})==1

    else
    stdlist(i,1)=std(zsteparray{i,1}(:,1));
    end
end

% make new list with step in nm, median, std

steps=[0.01053:0.01053:((length(meanlist))*0.01053)]';
meandata=[steps,meanlist,stdlist];

%plot data
figure
shadedErrorBar(meandata(:,1),meandata(:,2),meandata(:,3));

%% select final range and fit/evaluate to smooth out ripples, DO NOT
FORGET to save calibration file

%select final range of calibration file manually
selectedrange=meandata(124:266,1:3);%set range here!

%look up zero point and set this to zero
selectedrange(:,1)=selectedrange(:,1)-2.116530000000000;%set zero
point value here!
%plot selected range
figure
shadedErrorBar(selectedrange(:,1),selectedrange(:,2),selectedrange(:,
3));

% fit curve
p=polyfit(selectedrange(:,1),selectedrange(:,2),3);

%evaluate defined range
clear range
range=[-1:0.0001:1]';
calibration = polyval(p(1:end),range);
calibration=[range,calibration];

%plot calibration curve
hold on
plot (calibration(:,1),calibration(:,2));
```