

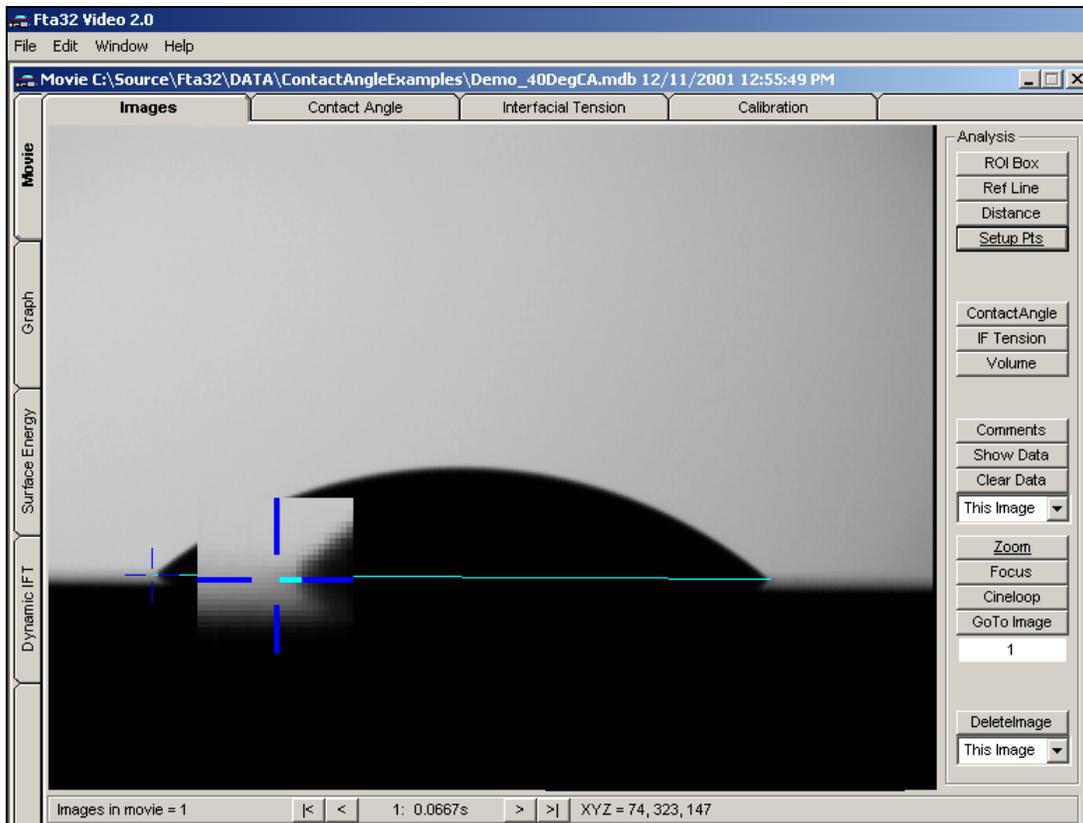
Manual Contact Angles

June 30, 2004

Contact angles can be manually measured with almost the same precision as automatic mode, but at more effort of course. The following example is a known 39.6° sapphire ball standard image. We will use Non-Spherical mode for generality.

Step 1: Form Baseline.

The Zoom function can help you see the “corner” of the drop. You want to right-click the baseline end points at the point where the *projection of the drop profile will end*. The very corner is not as dark because there is little liquid to refract light. The automatic algorithm accounts for this. Notice where the left end of the baseline has been placed in the zoomed image. You can move the baseline end point by holding down the right mouse button while pointing at the end and dragging it.



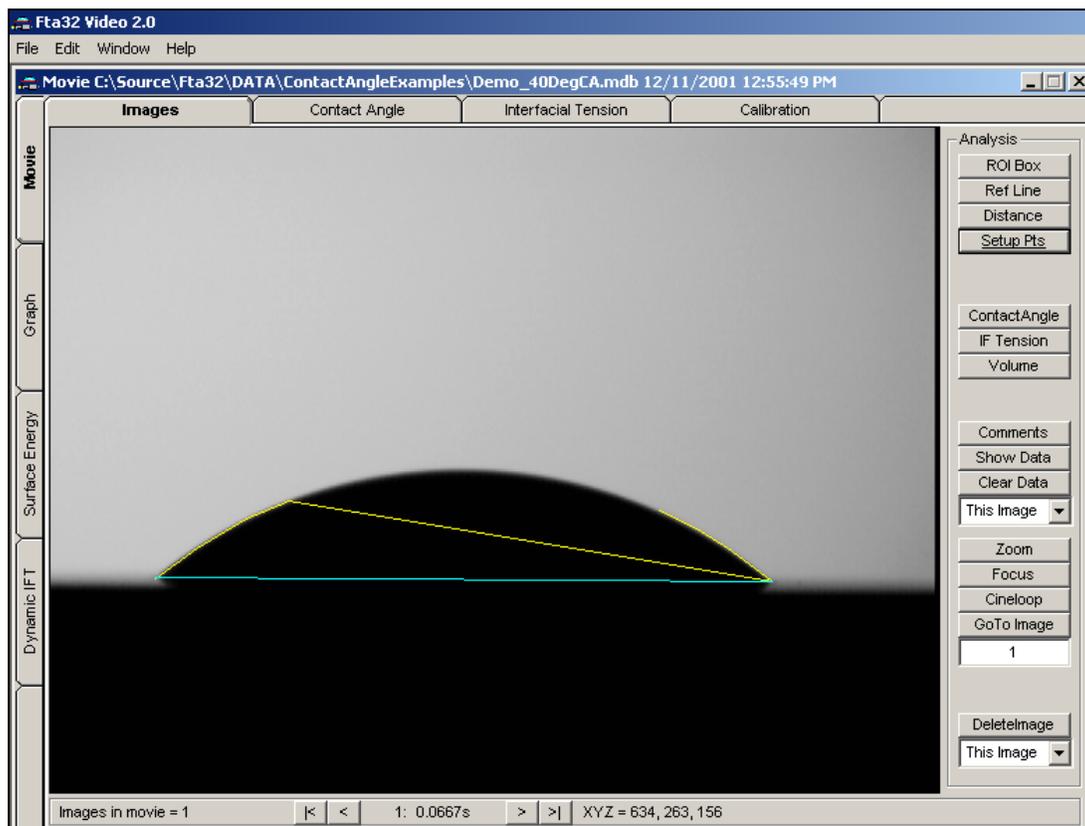
Step 2: Drop Profile Points.

You must next left-click between three and five points each for the left and right drop profiles. These will be marked with yellow dots and yellow lines between them to show you where you have marked points. It is good practice to have a profile point coincide with the baseline end point on each side. This was omitted in the previous image for clarity.

The following image shows these straight yellow lines. The long diagonal line connects the last point on the left with the first point on the right.

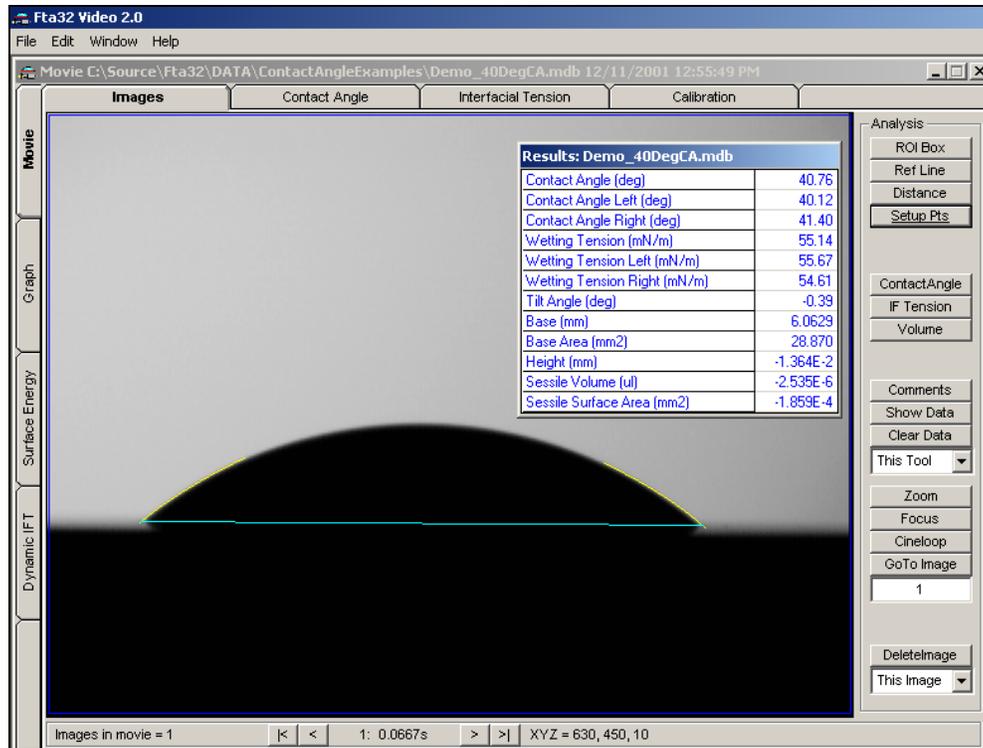
The algorithm will sort the points into left side and right side, using the mid-point of your baseline as the dividing line.

The accuracy of the final fit will be determined by how well you place your points exactly on the profile. It helps to spread them more or less evenly.

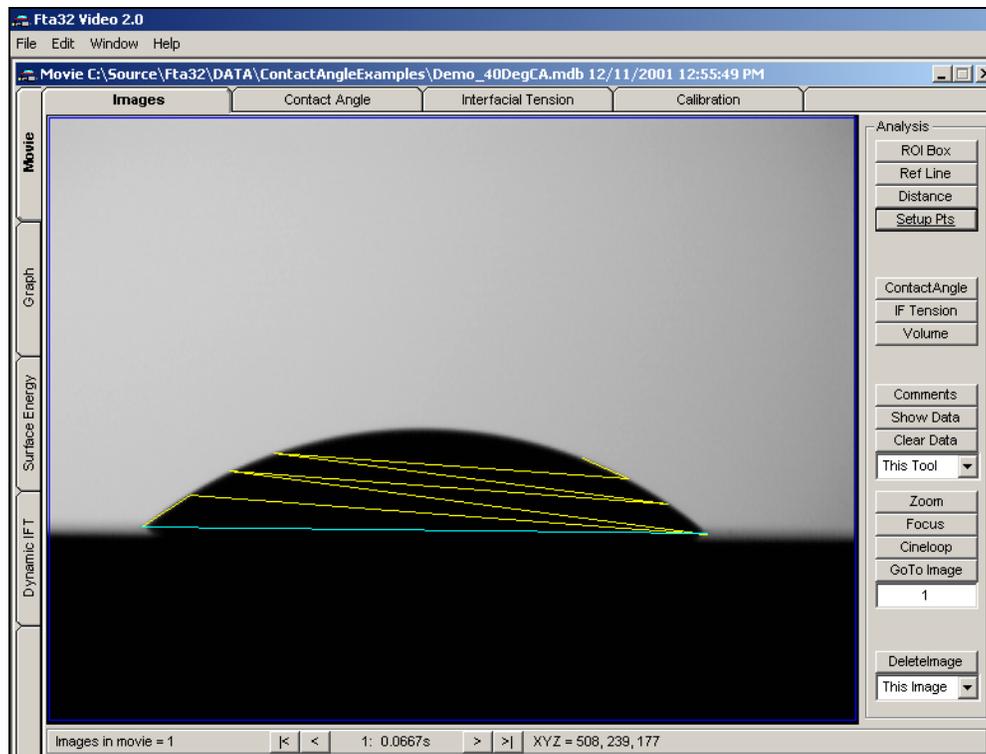


Step 3. Compute Angle.

Click ContactAngle and the points you provided will be converted into polynomials that fit each side, and then into left and right contact angles. If you had chosen Spherical Mode, a single circle would be fit using all of your points.



As an illustration that the order of the points makes no difference, the following set yields the same answer.



File: ManualContactAngles.doc