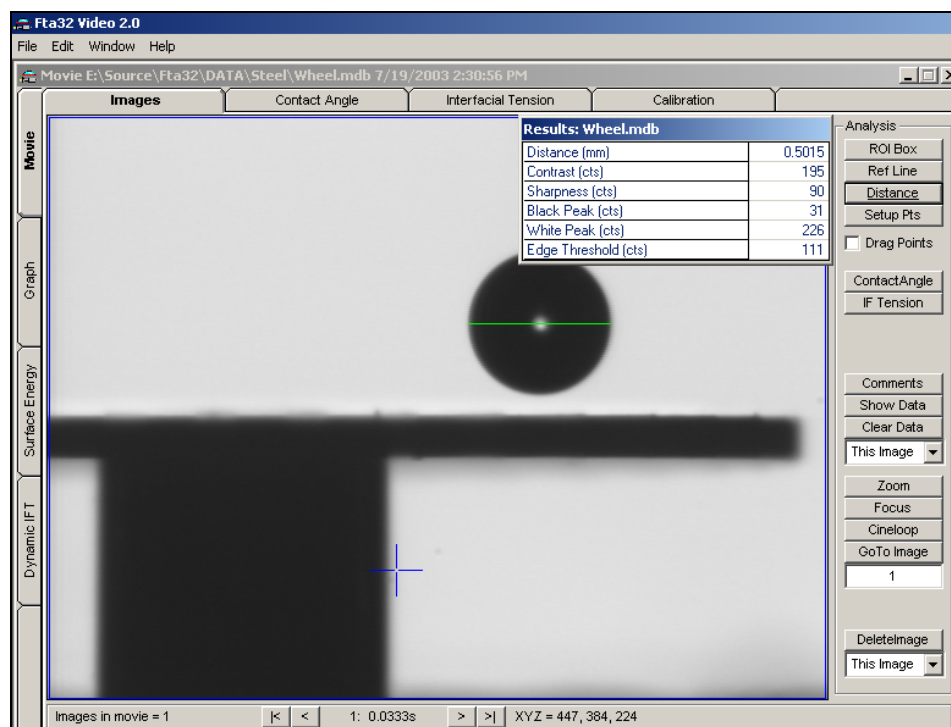


Contact Angles on Small Metal Parts

July 19, 2003

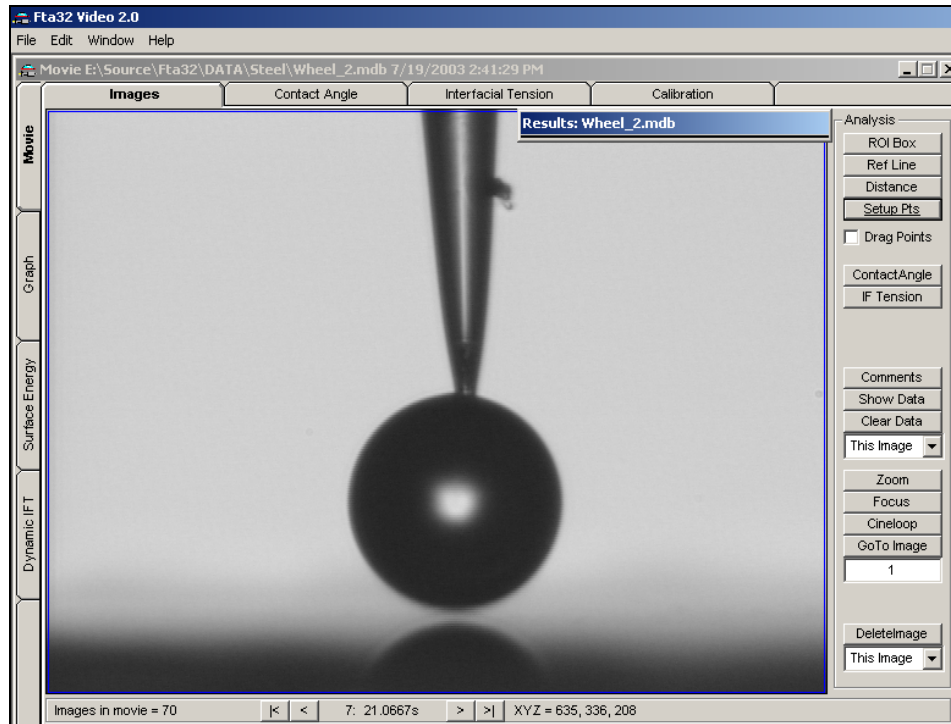
Contact angle measurements were made on a precision metal part to illustrate the capability of the FTA4000 to analyze surfaces on small parts.

The first image shows a pendant drop formed on a glass capillary tip above the part to be measured. The diameter of the pendant drop is approximately 500 μ m.

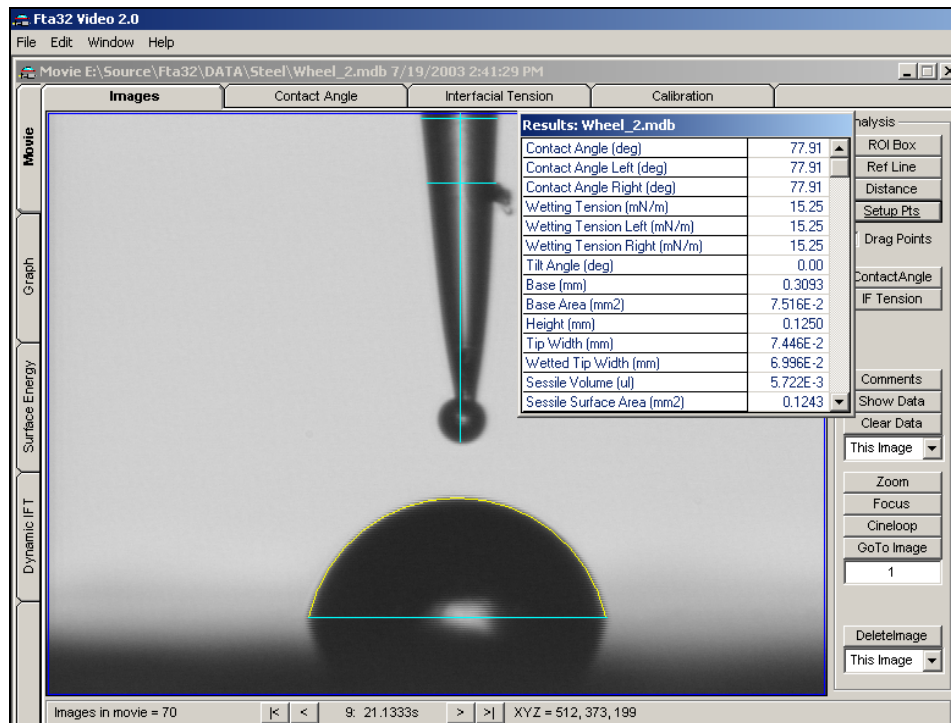


Water droplet above part to be measured

The next two images are at higher magnification and show the drop just before and just after deposition on the surface. The horizontal width of these images is 600 μ m. Notice the reflection image of the drop on the sample surface just below the real drop. The deposited volume is 5.7 nanoliters. The diameter of the drop's base is 309 μ m. Much smaller drops are possible, if needed, but it is convenient to use as large a drop as possible and still fit on the part.

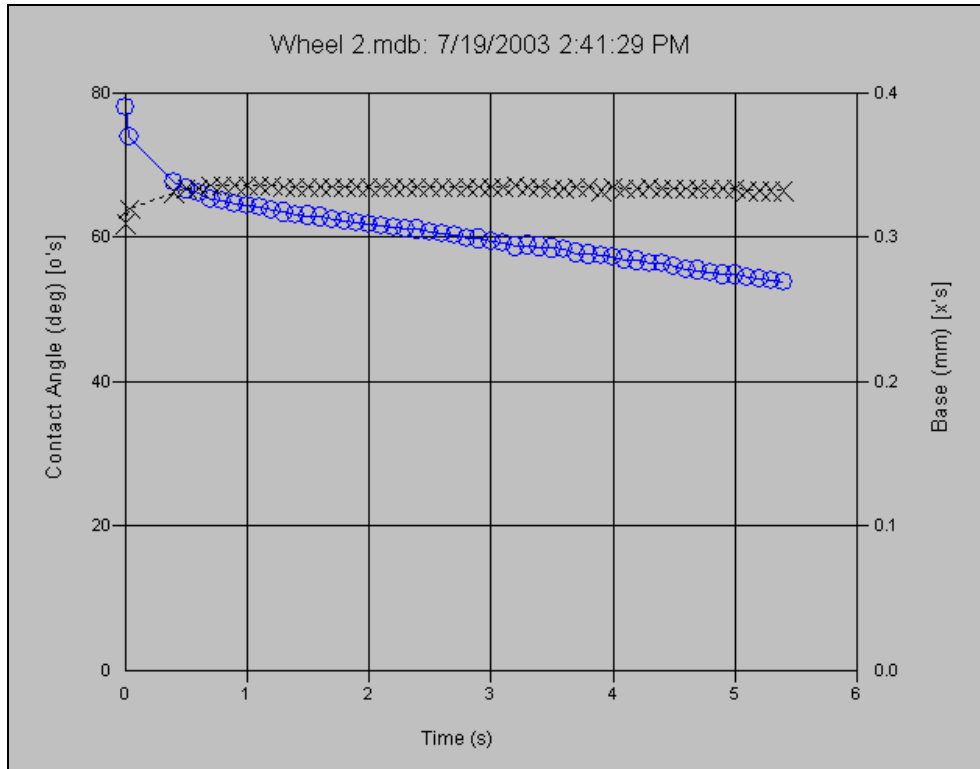


Water drop above sample



Initial contact angle of sessile drop on surface

Contact angles were measured automatically for a period of time after deposition. The graph shows the contact angle and base area as a function of time. There is some spreading after deposition. Because the sample is metal, the most likely cause is a lubricant or some contaminant film. After the drop stops spreading, at about 1 second, the remaining loss of contact angle is attributed to evaporation.



Water contact angle and sessile drop base area after deposition