Reliable Determination of Contact Angle From the Height, and Volume of Asymmetric Sessile Drops

**Title:** Reliable Determination of Contact Angle from the Height and Volume of Asymmetric Sessile Drops

**Invention:** This is a method for finding the contact angle of a fluid on a surface, which is used to measure characteristics of properties in materials.

**Background:** Current lab methods of determining surface wettability are vulnerable to surface irregularities and system errors, which are difficult to locate and model. The technology presented here overwrites the assumption that more information is always better, using only drop height and volume measurements along with an improved, mathematically elegant calculation. This reduces both uncertainty and systematic errors introduced by the traditional method.

**Applications:**
- Measurement of contact angles of surfaces, which are used to determine the surface degree of wetting
- Research and manufacturing process for:
  - Medical tools
  - Automotive
  - Appliances
  - Pharmaceuticals
  - Construction surfaces
  - Marine products
  - Contact lenses
- Geology
- Finding surface irregularities
- High-standard laboratories

**Advantages:**
• Requires less measurements to calculate the final value
• More efficient
• Less likely to introduce systematic errors
• Uses the entire contact line versus the current standard of one point on the line
• Reduces uncertainty caused by the subjective choice of a single point
• Resistant to surface irregularity
• Yields other values like footprint radius of the drop and crown curvature

Licensing Manager:
John Geikler
JohnG@tla.arizona.edu
(520) 626-4605

Inventors
Feredoon Behroozi
Professor Emeritus, None

Peter Behroozi
Assistant Professor, 26 Astronomy