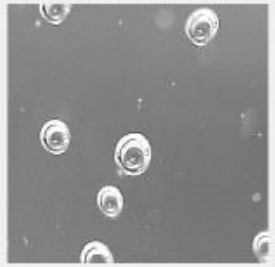
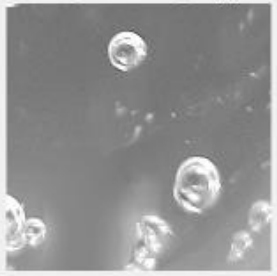
Original Image (a)



Original Image (b)

Original Image (c)

Original Image (d)



Binary Image (a)

A
Count: 7
Ratio: 0.0705

Binary Image (b)

B
Count: 6
Ratio: 0.0726

Binary Image (c)

C
Count: 5
Ratio: 0.1481

Binary Image (d)

D
Count: 6
Ratio: 0.1377

SOLUTION 4A:

- Assume that clumps of bubbles are one bubble
- Assume smaller specks are not bubbles
- Use Otsu's method to spot the bubbles from the background based on intensity with *'graythresh'* function
- Create the black and white image with *'im2bw'* and the threshold value
- Apply morphological operations to BW
- Use *'strel'* *'imclose'* and *'imopen'* to locate and smoothen the bubbles, close their gaps, and remove smaller noise
- Assumed 'disk' would work best with *'strel'* because of the shape and nature of the bubbles
- Fill the holes in any gaps that are bubbles

Project 4 Results

BWa

BWb

BWc

BWd

G1

G2

G3

G4

A Results:
ACC - 0.9866
F1 - 0.9114

B Results:
ACC - 0.9866
F1 - 0.9113

C Results:
ACC - 0.9808
F1 - 0.9392

D Results:
ACC - 0.9881
F1 - 0.9549