Using Electrochemical Impedance Spectroscopy to Study Biofilm Growth in a 3D-Printed Flow Cell System

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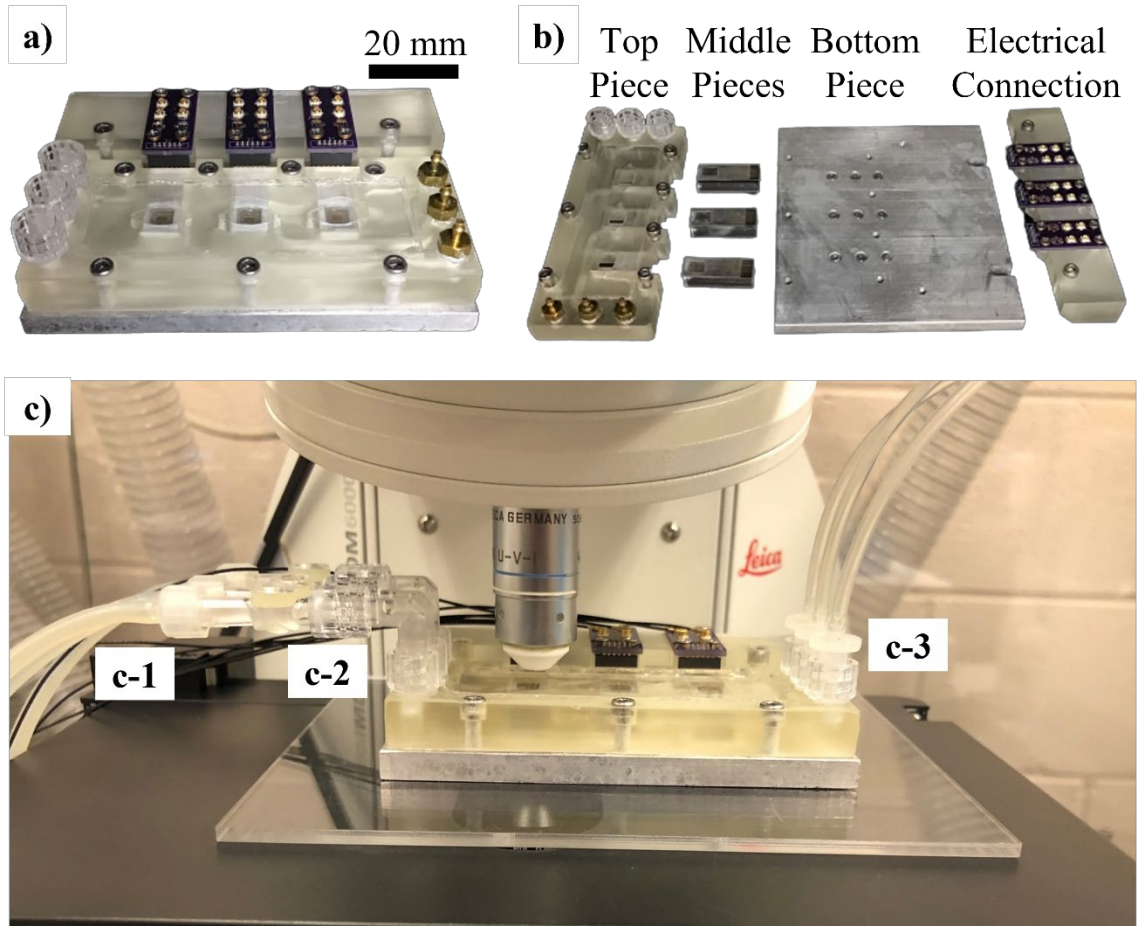

a)
20 mm
b)
Top Piece
Middle Pieces
Bottom Piece
Electrical Connection
c)
c-1
c-2
c-3

Figure 2

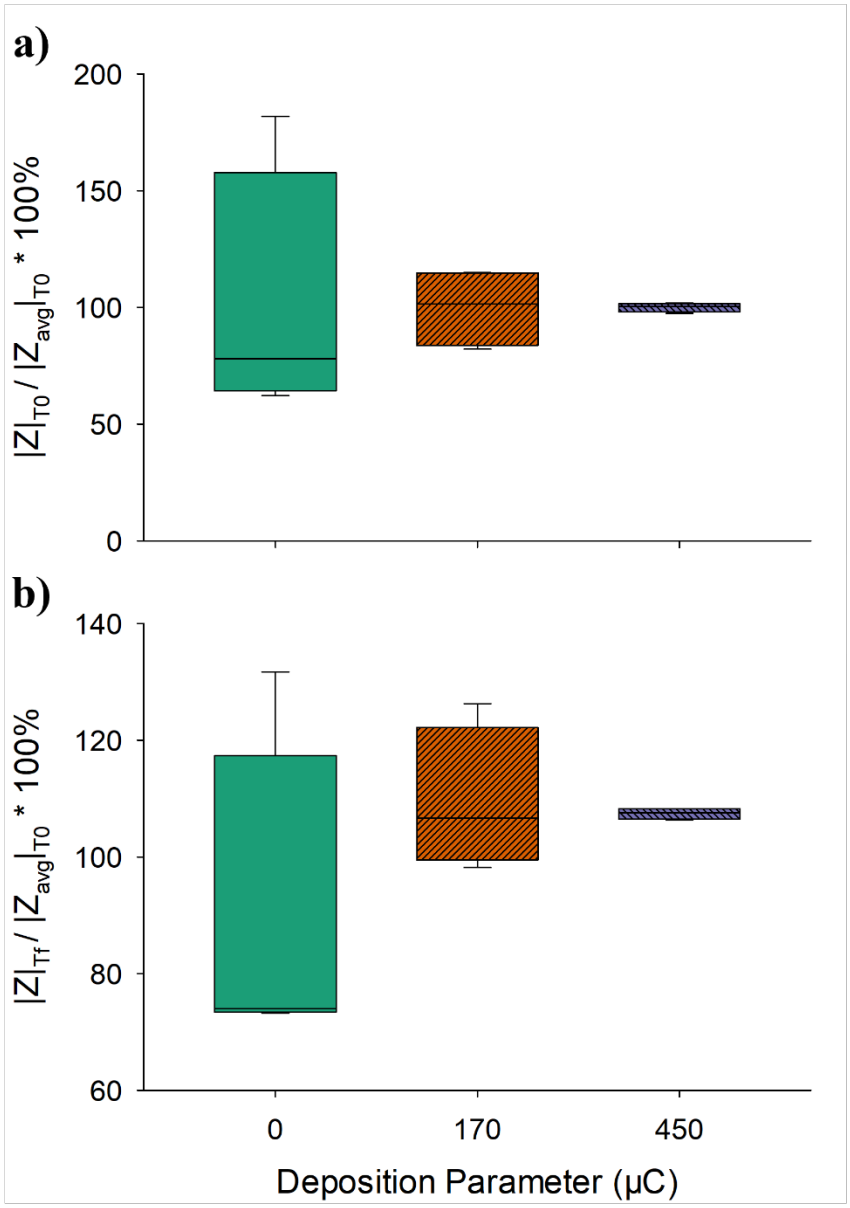

a)
200
150
100
50
0
|Z|T0 / |Zavg|T0 * 100%
b)
140
120
100
80
60
|Z|Tf / |Zavg|T0 * 100%
0
170
450
Deposition Parameter (µC)

Figure 3

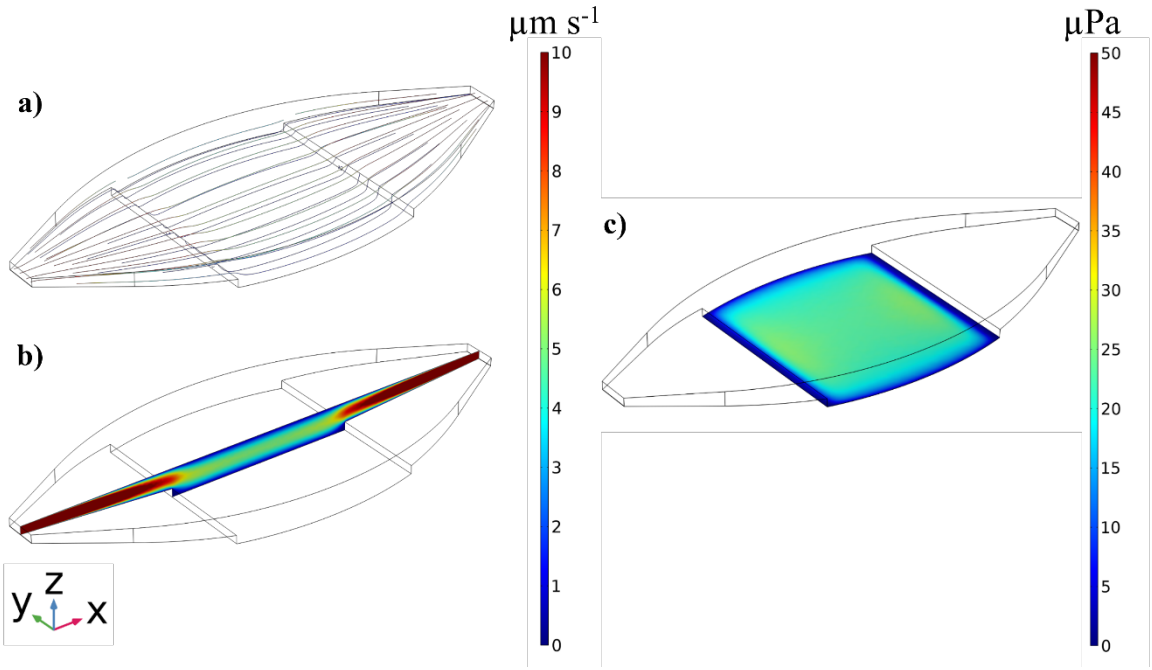


Figure 4

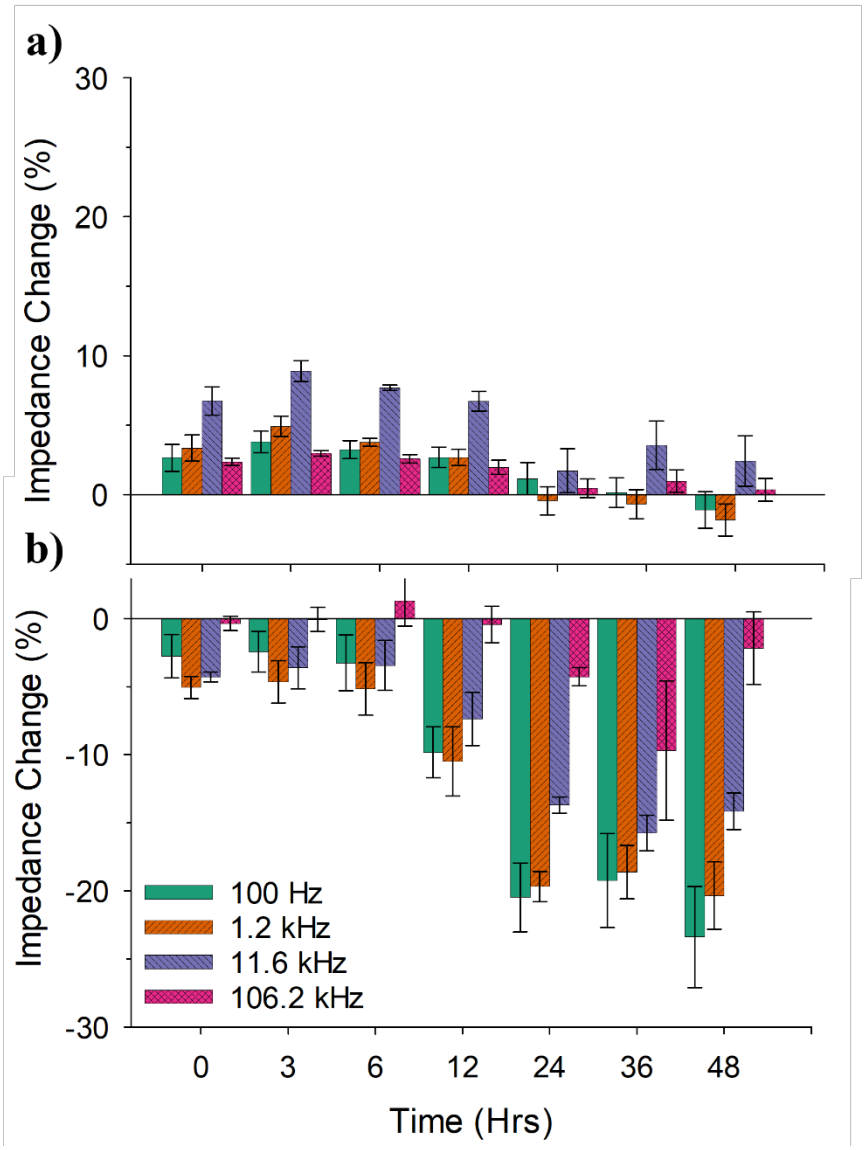
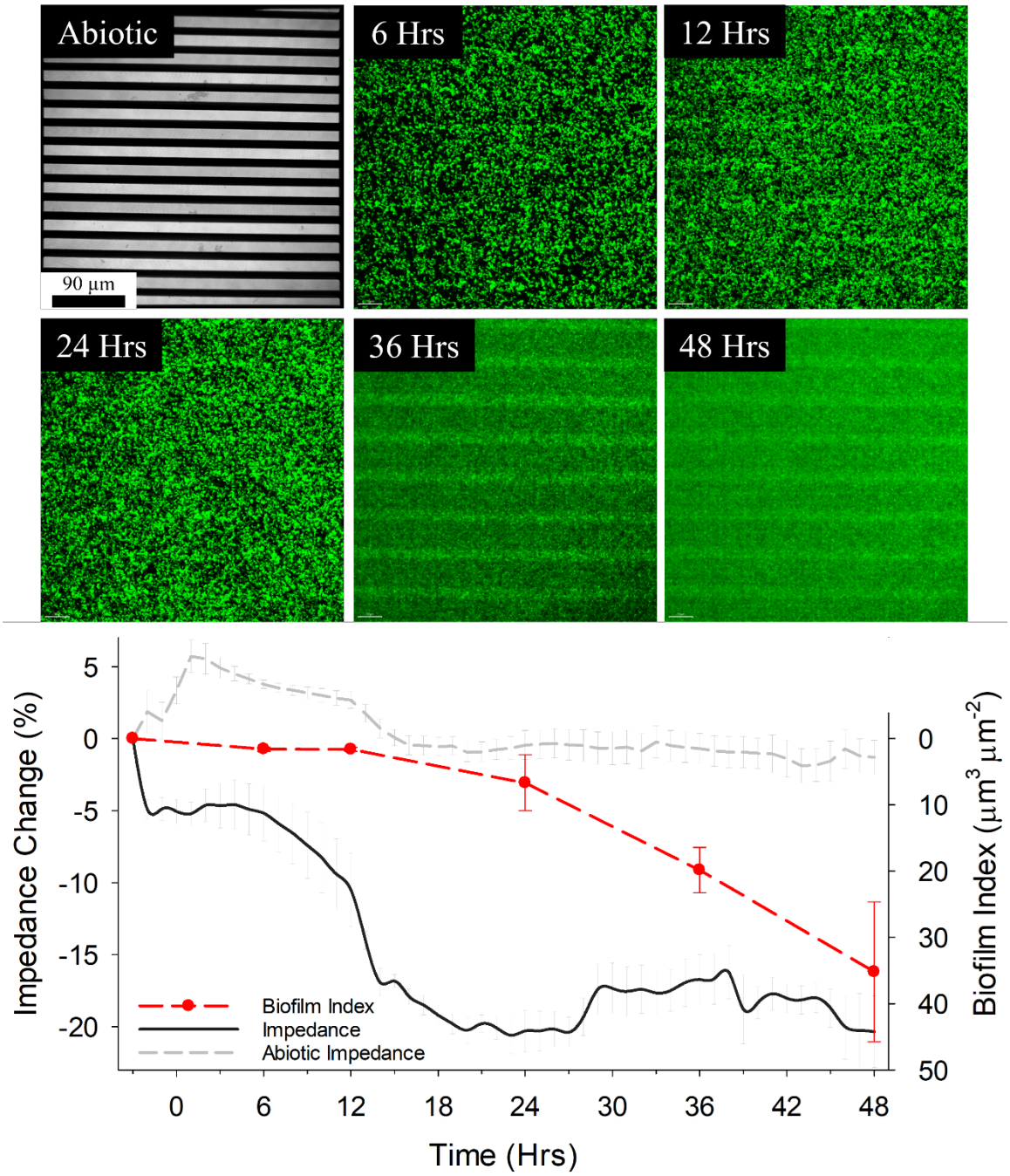

a)
b)
Impedance Change (%)
30
20
10
0
-10
-20
-30
100 Hz
1.2 kHz
11.6 kHz
106.2 kHz
0
3
6
12
24
36
48
Time (Hrs)

Figure 5



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613 Figure 6

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