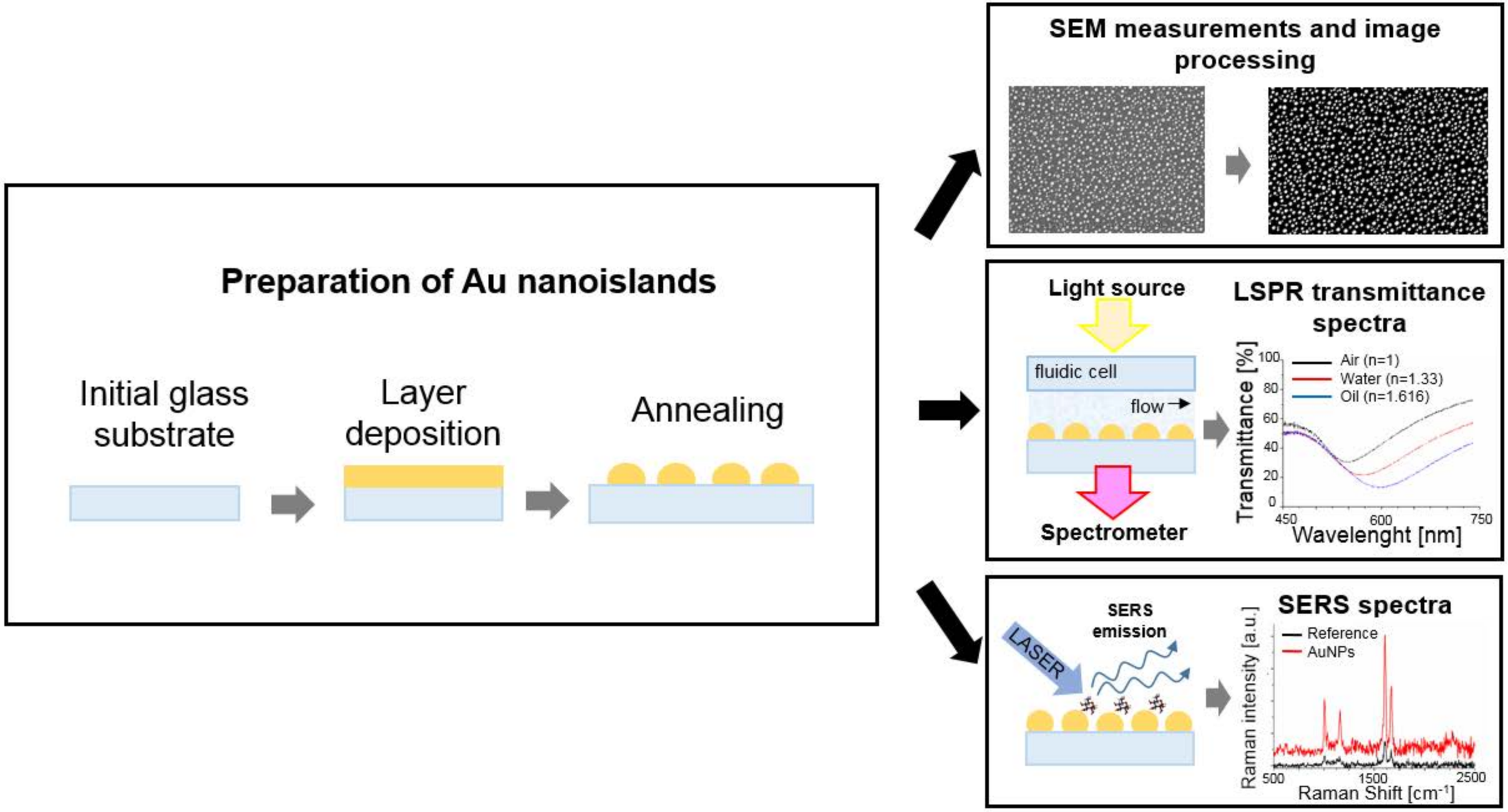
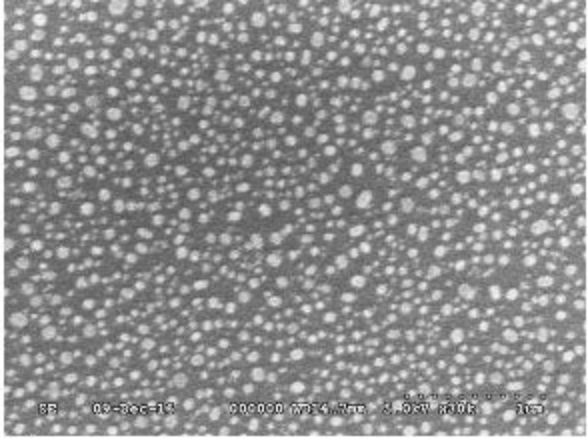
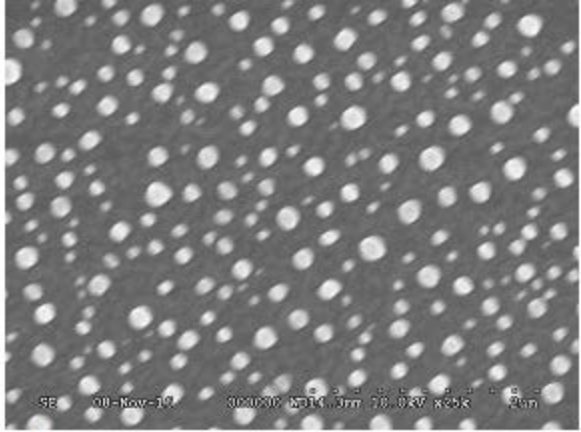
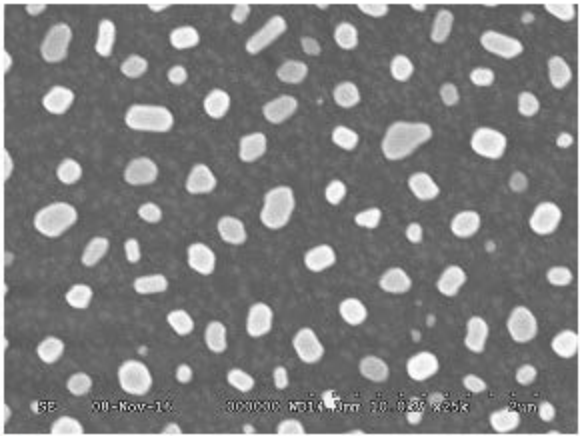

Preparation of Au nanoislands
Initial glass substrate
Layer deposition
Annealing
SEM measurements and image processing
Light source
fluidic cell
flow
Spectrometer
LSPR transmittance spectra
Transmittance [%]
Air (n=1)
Water (n=1.33)
Oil (n=1.616)
Wavelenght [nm]
SERS emission
LASER
SERS spectra
Reference
AuNPs
Raman intensity [a.u.]
Raman Shift [cm-1]



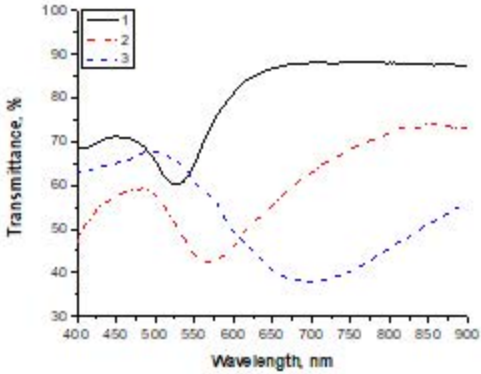
(a)



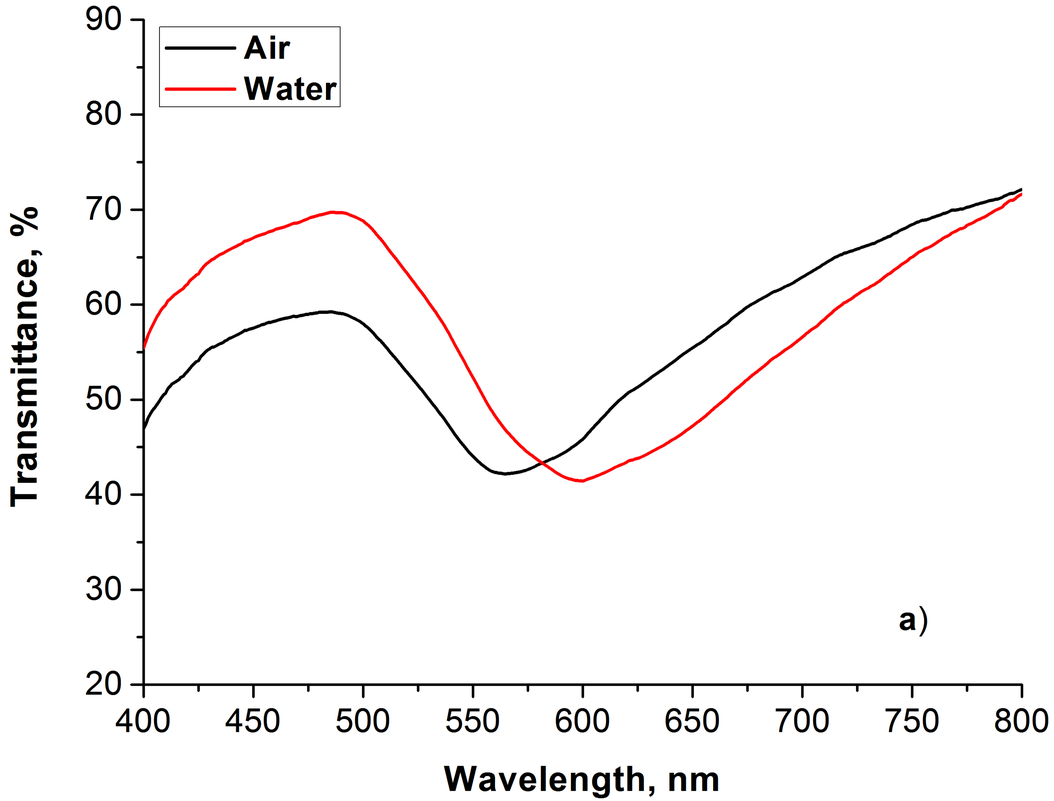
(b)

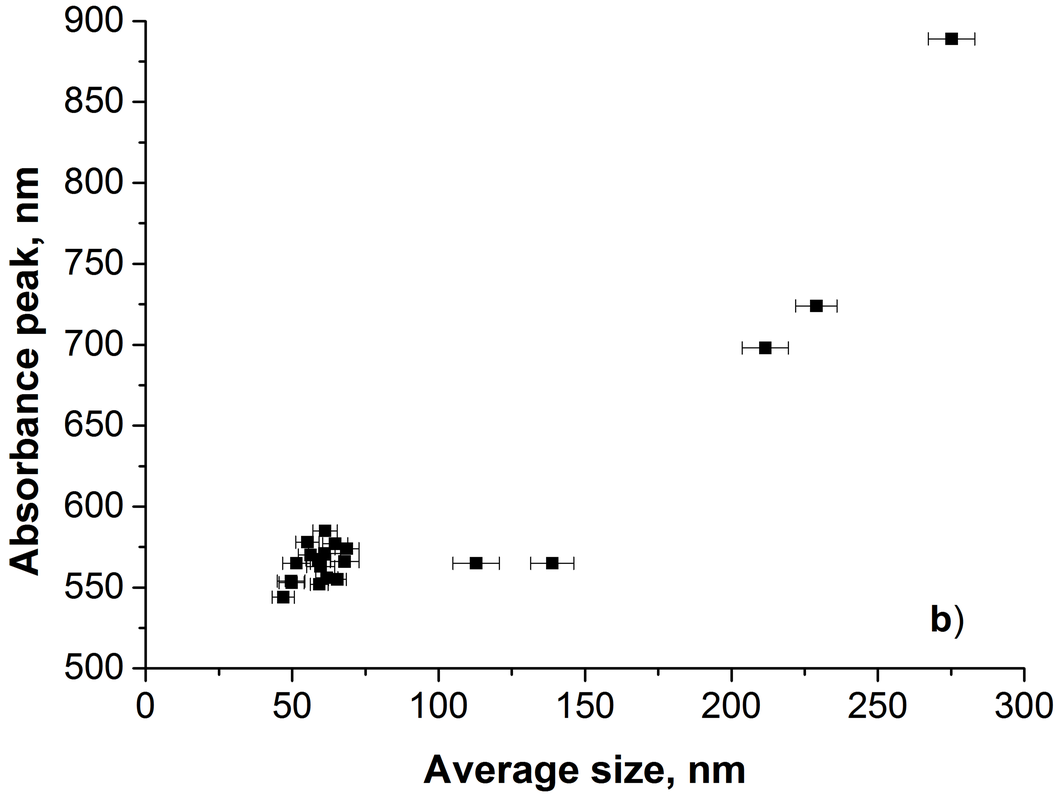


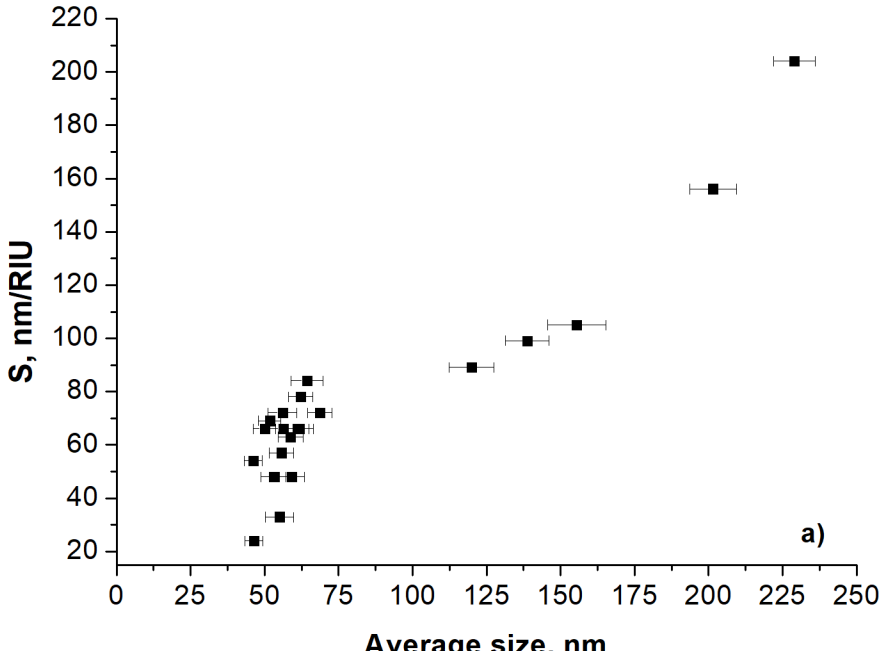
(c)

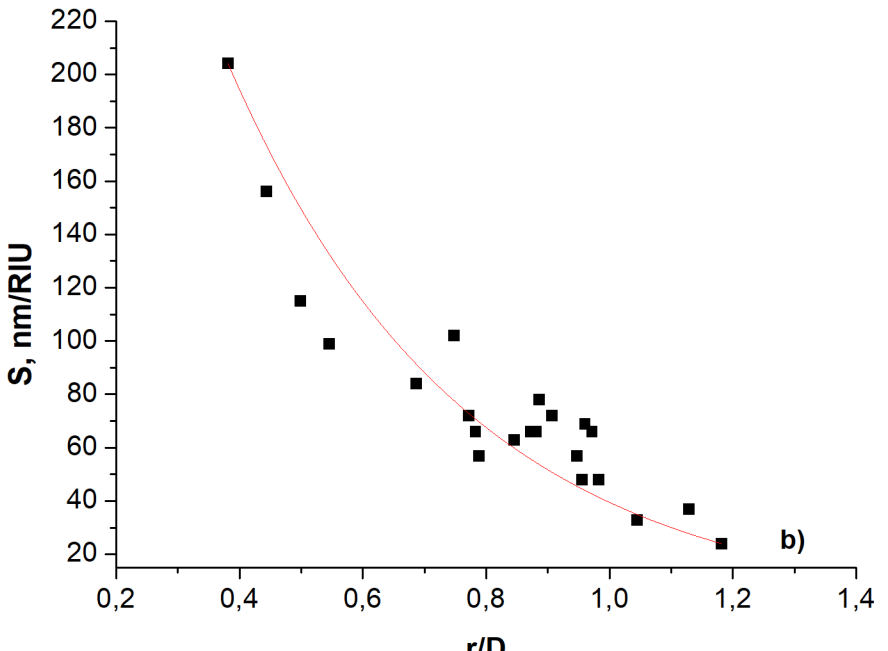

1
2
3
Transmittance, %
Wavelength, nm
100
90
80
70
60
50
40
30
400
450
500
550
600
650
700
750
800
850
900

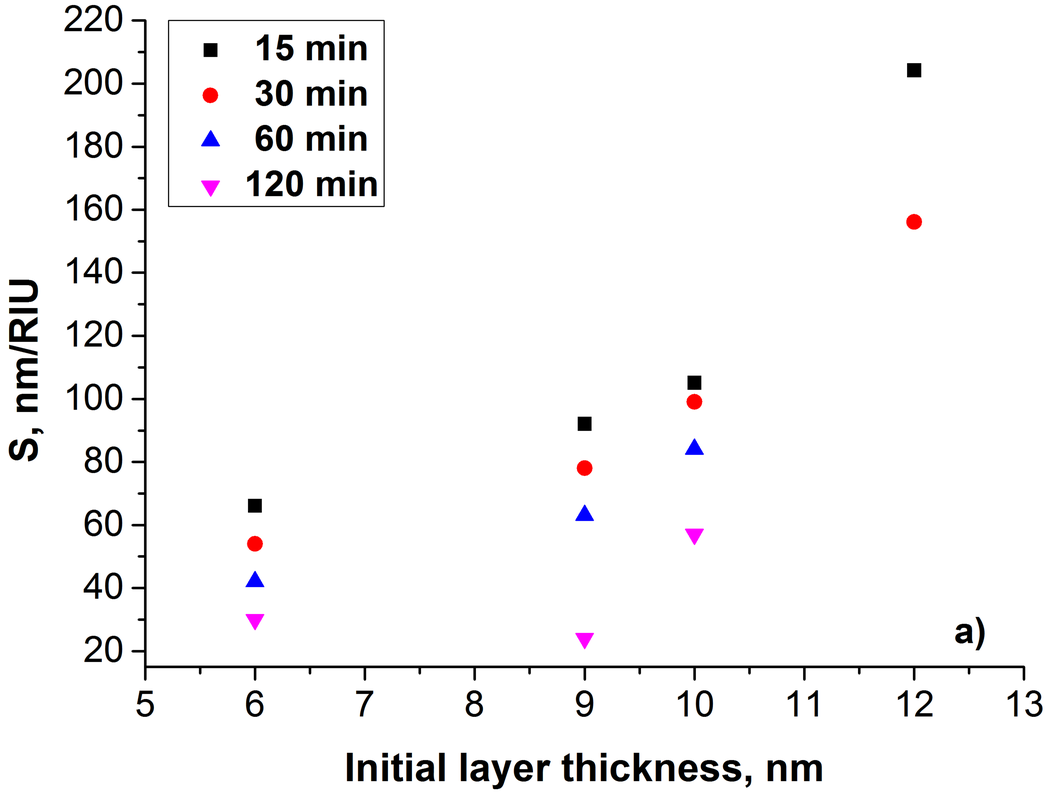
(d)

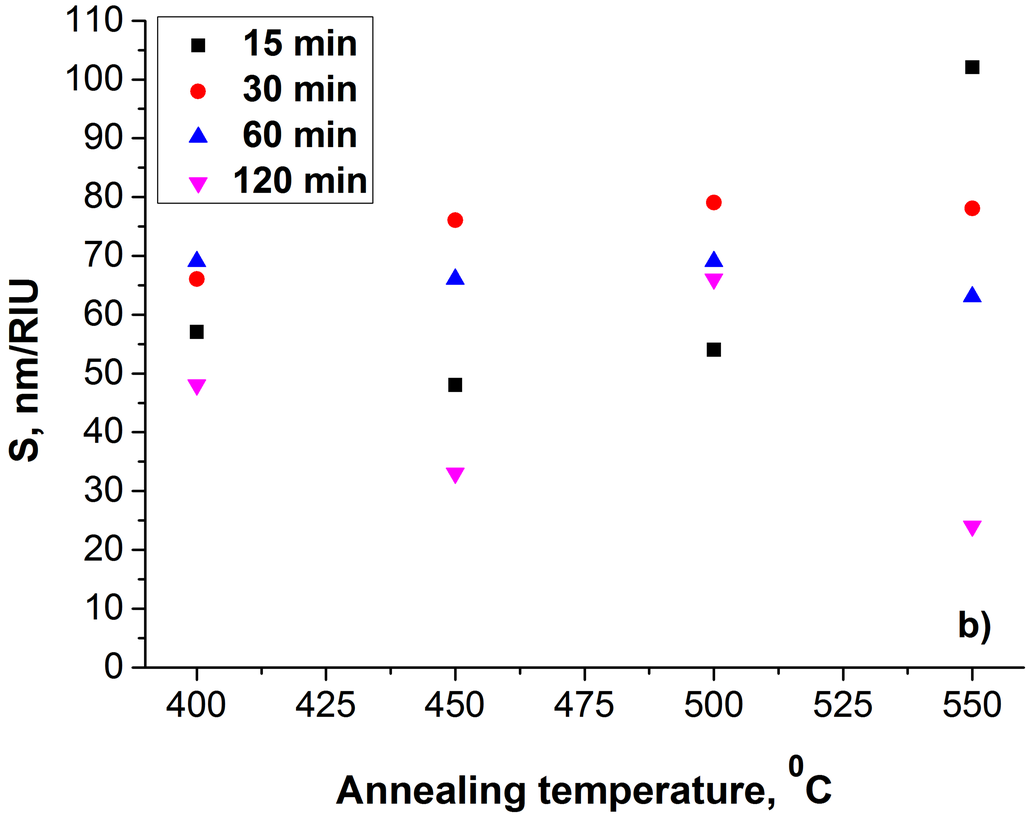

Air
Water
Transmittance, %
Wavelength, nm
a)
90
80
70
60
50
40
30
20
400
450
500
550
600
650
700
750
800

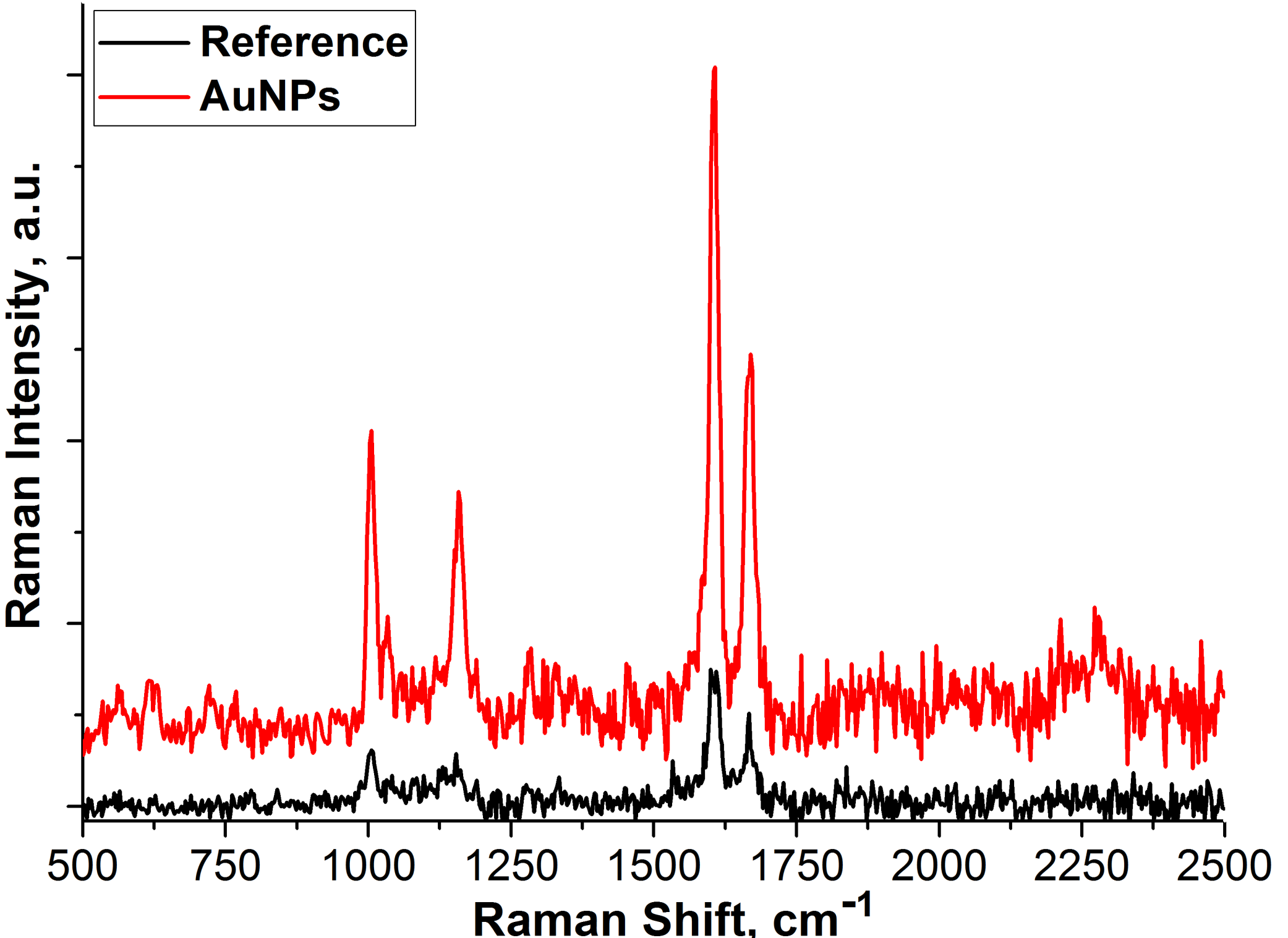

Absorbance peak, nm
Average size, nm
b)
900
850
800
750
700
650
600
550
500
0
50
100
150
200
250
300

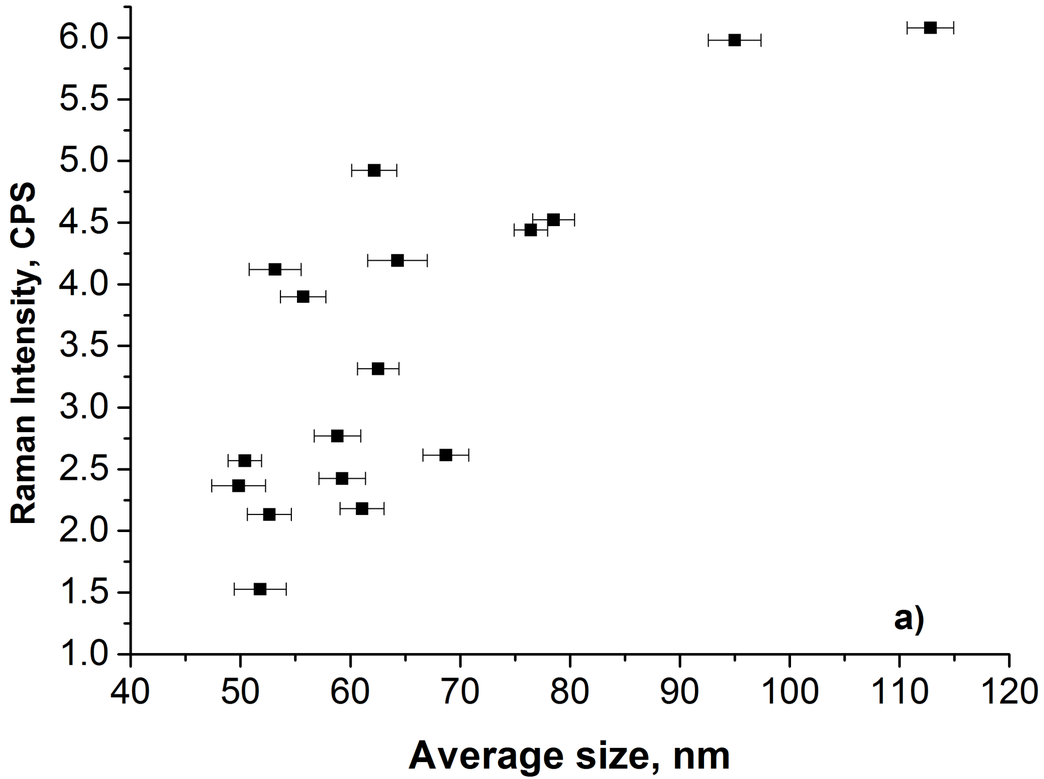

S, nm/RIU
Average size, nm
a)
220
200
180
160
140
120
100
80
60
40
20
0
25
50
75
100
125
150
175
200
225
250

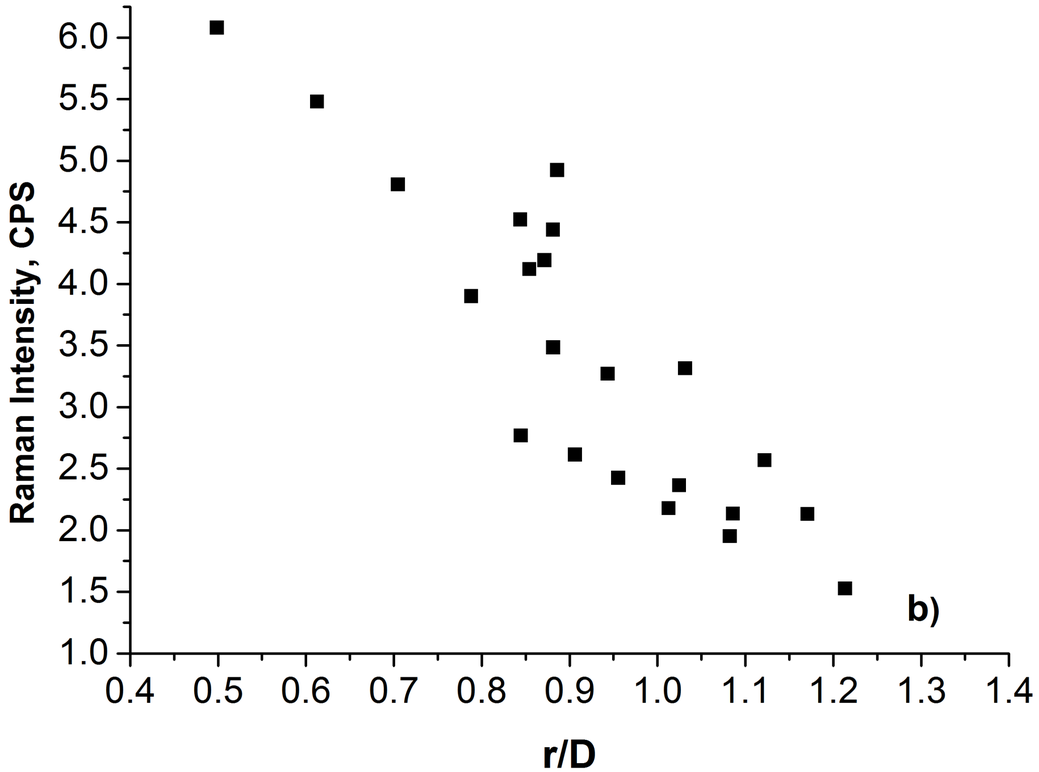

S, nm/RIU
r/D
b)
220
200
180
160
140
120
100
80
60
40
20
0,2
0,4
0,6
0,8
1,0
1,2
1,4

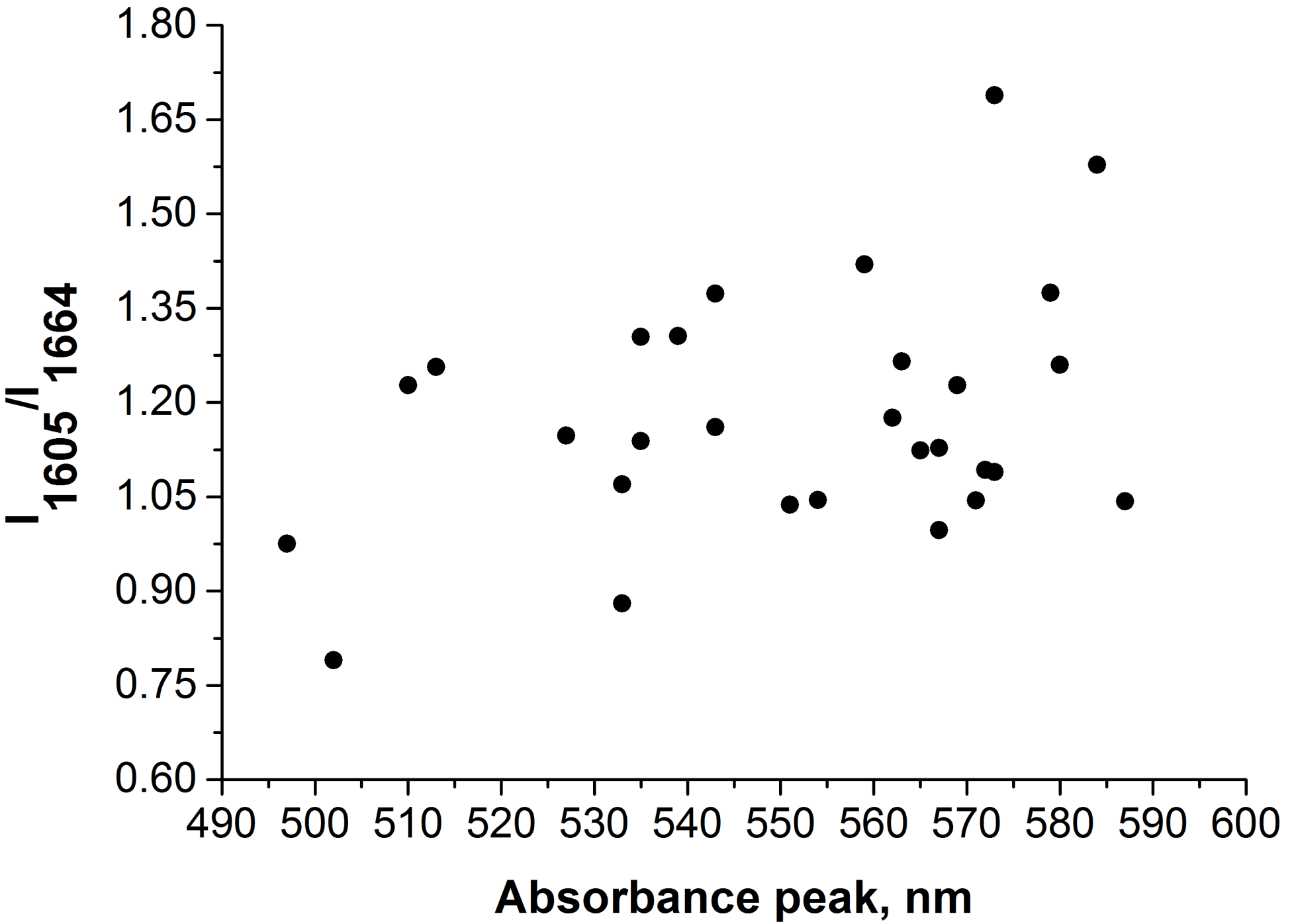

15 min
30 min
60 min
120 min
S, nm/RIU
Initial layer thickness, nm
a)
220
200
180
160
140
120
100
80
60
40
20
5
6
7
8
9
10
11
12
13


15 min
30 min
60 min
120 min
S, nm/RIU
Annealing temperature, ^{0}C
b)
110
100
90
80
70
60
50
40
30
20
10
0
400
425
450
475
500
525
550


Reference
AuNPs
Raman Intensity, a.u.
500
750
1000
1250
1500
1750
2000
2250
2500
Raman Shift, cm-1


Raman Intensity, CPS
Average size, nm
a)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
40
50
60
70
80
90
100
110
120


Raman Intensity, CPS
r/D
b)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4


1.80
1.65
1.50
1.35
1.20
1.05
0.90
0.75
0.60
I1605/I1664
490
500
510
520
530
540
550
560
570
580
590
600
Absorbance peak, nm