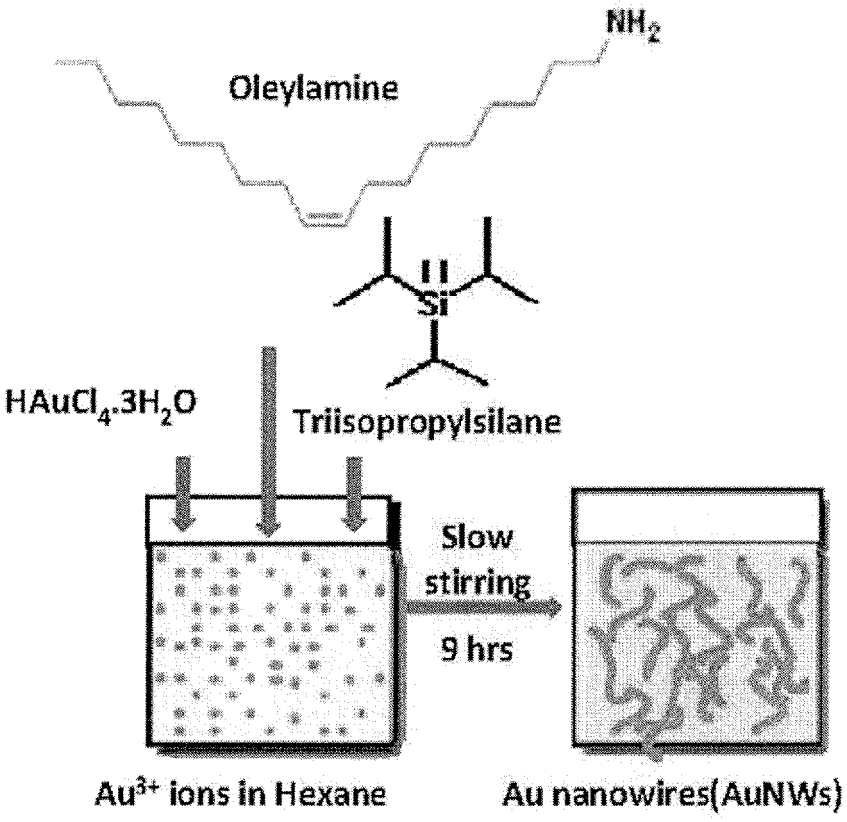

NH2
Oleylamine
Si
HAuCl4.3H2O
Triisopropylsilane
Slow
stirring
9 hrs
Au3+ ions in Hexane
Au nanowires(AuNWs)

Fig 1

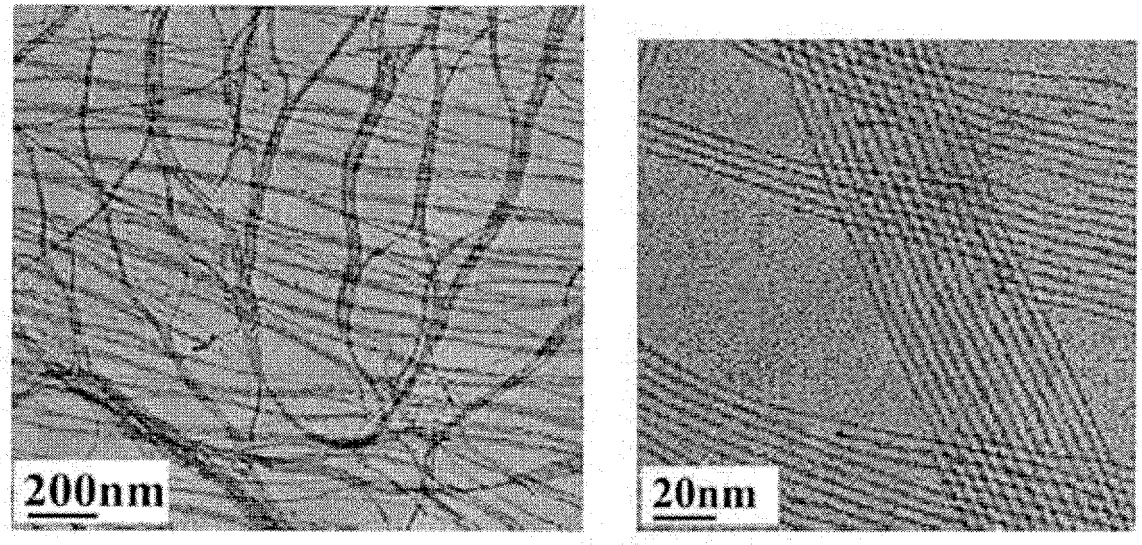
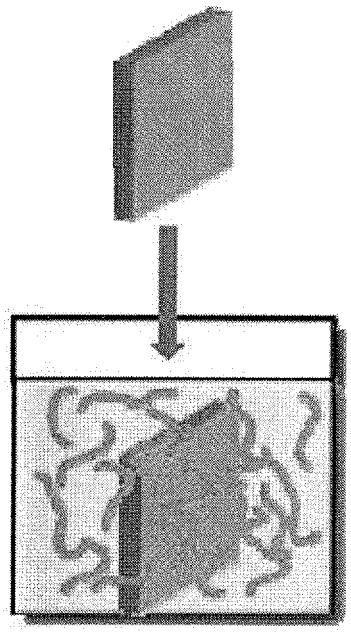


Fig 2.



Au nanowires (Au-NWs) in hexane solution

Fig 3

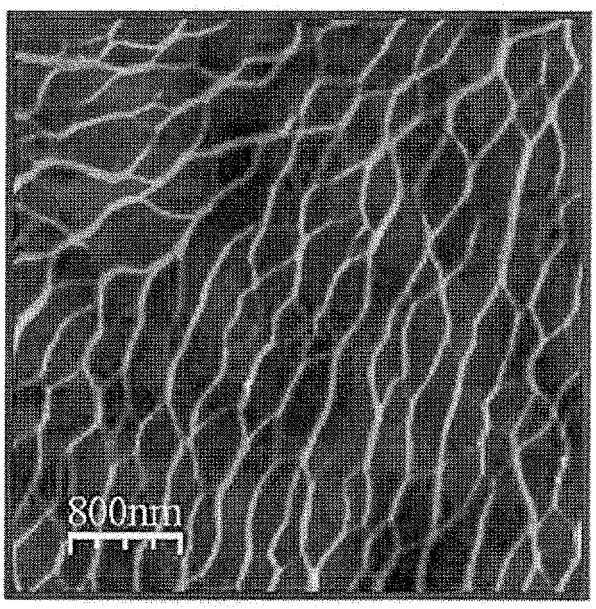


Fig. 4

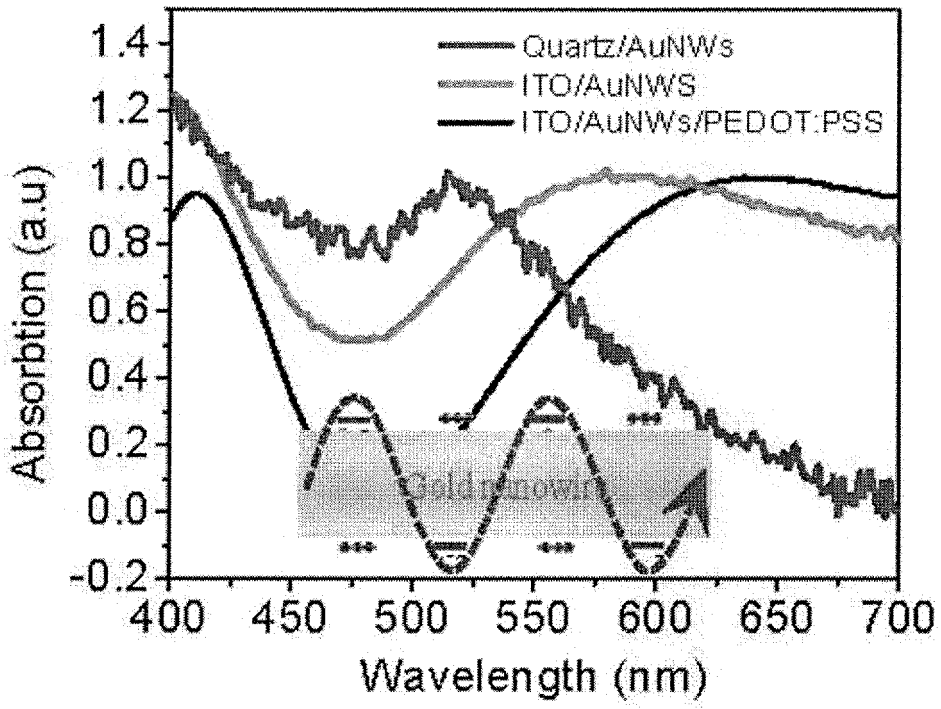

Quartz/AuNWs
ITO/AuNWS
ITO/AuNWs/PEDOT:PSS
Absorbtion (a.u)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
400
450
500
550
600
650
700
Wavelength (nm)

Fig. 5

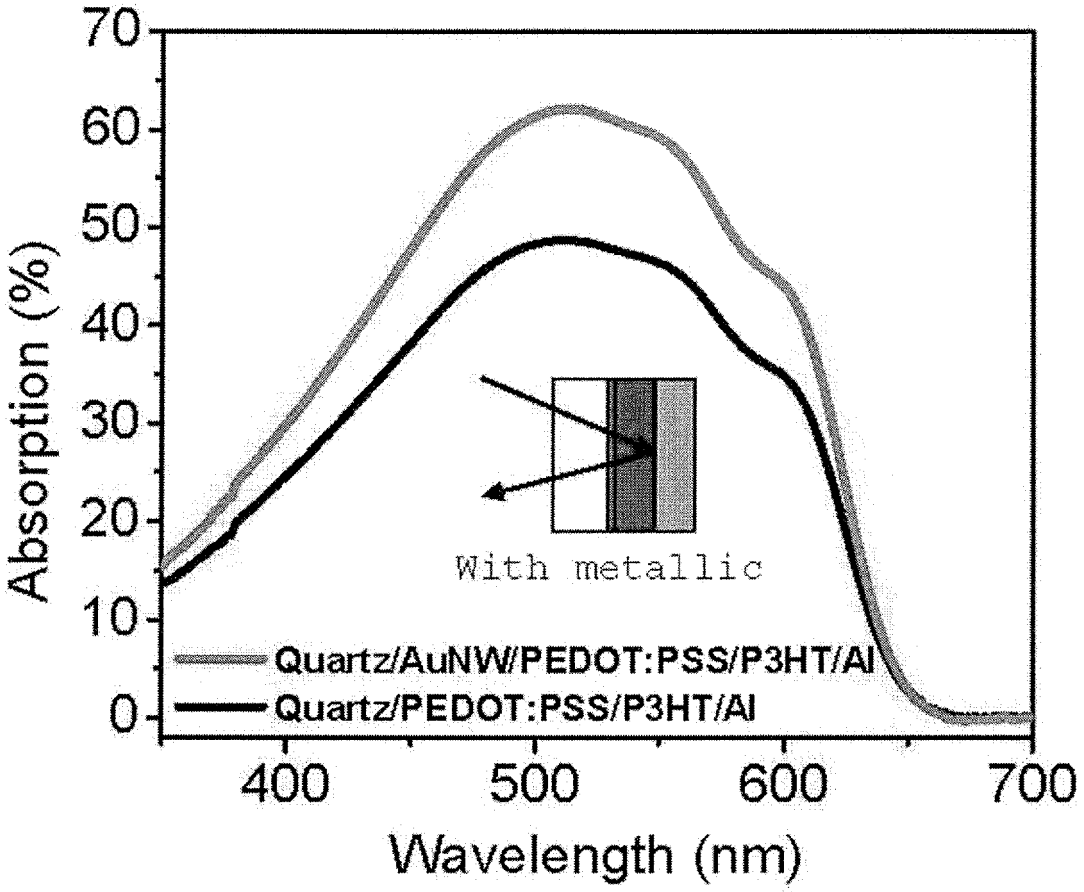

70
60
50
40
30
20
10
0
Absorption (%)
400
500
600
700
Wavelength (nm)
With metallic
Quartz/AuNW/PEDOT:PSS/P3HT/Al
Quartz/PEDOT:PSS/P3HT/Al

Fig.6

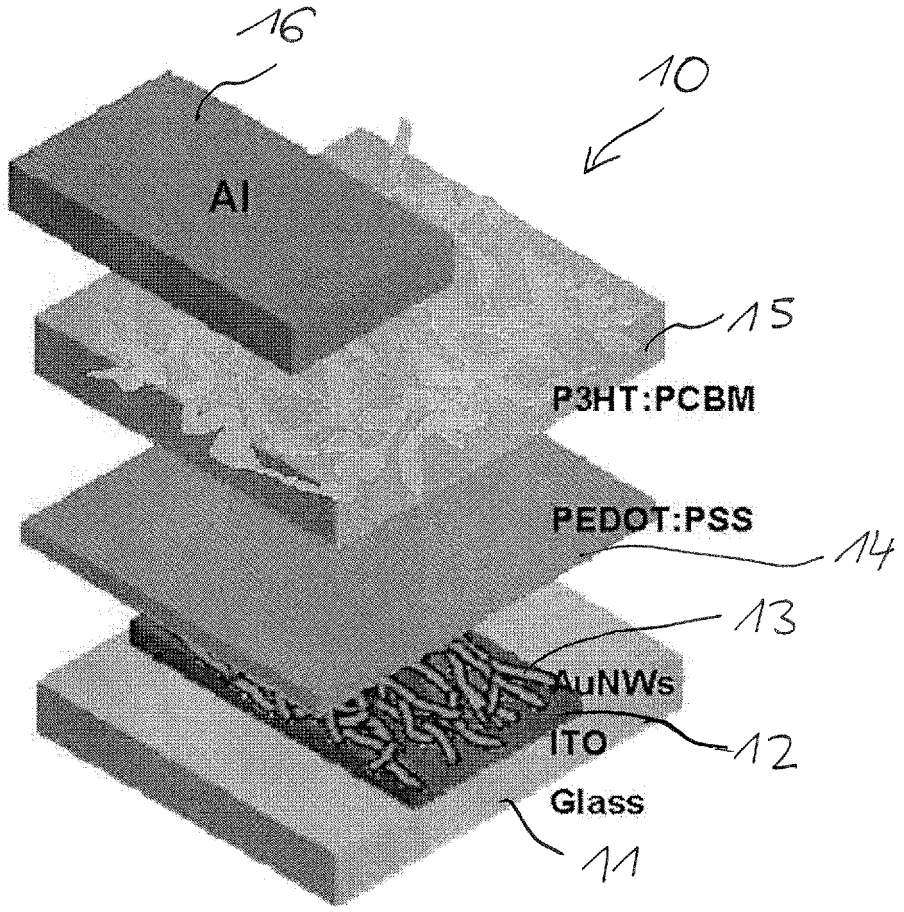


Fig 7

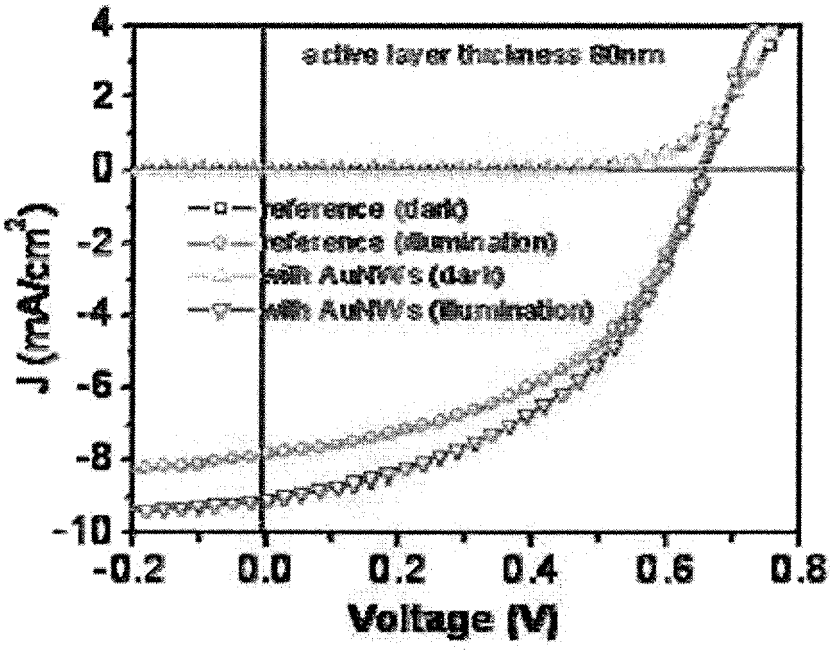

active layer thickness 60nm
reference (dark)
reference (illumination)
with AuNWs (dark)
with AuNWs (illumination)
J (mA/cm²)
Voltage (V)
4
2
0
-2
-4
-6
-8
-10
-0.2
0.0
0.2
0.4
0.6
0.8

Fig. 8

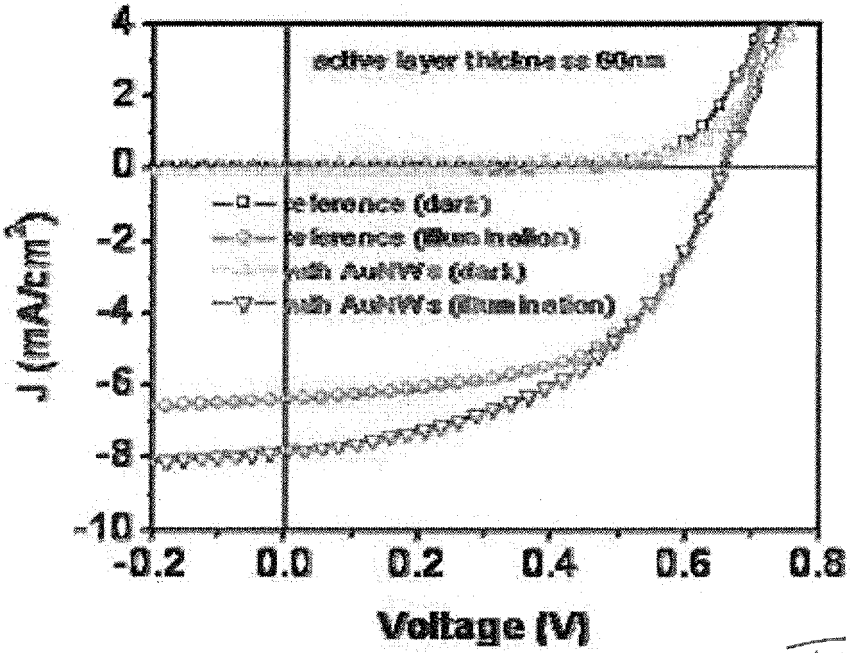

active layer thickness 60nm
J (mA/cm²)
Voltage (V)
4
2
0
-2
-4
-6
-8
-10
-0.2
0.0
0.2
0.4
0.6
0.8

Fig. 9

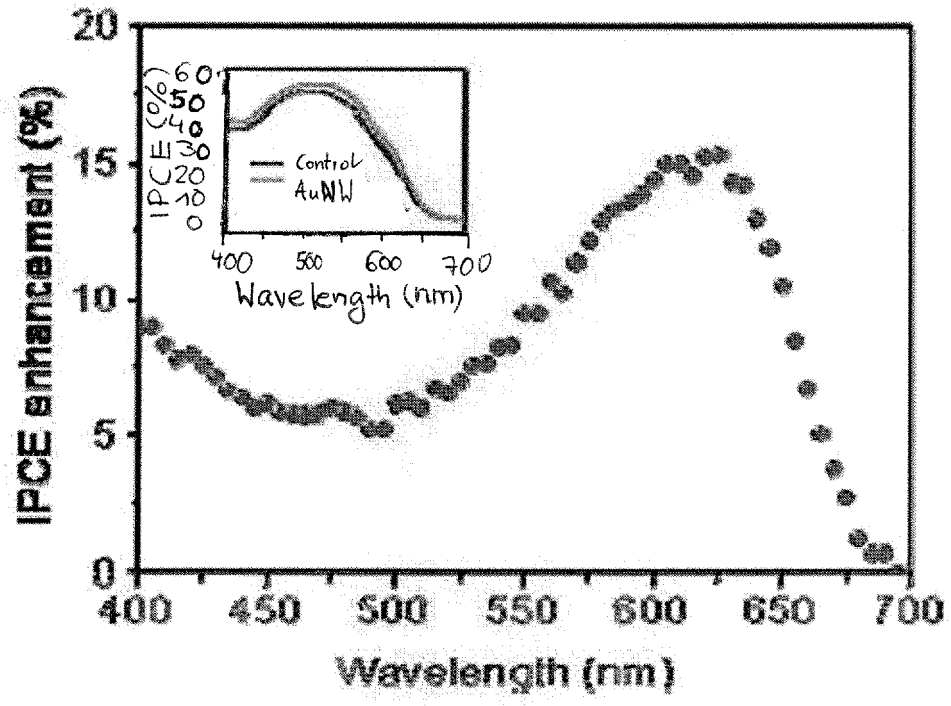

IPCE enhancement (%)
Wavelength (nm)
IPCE (%)
Control
AuNW
Wavelength (nm)

Fig. 10

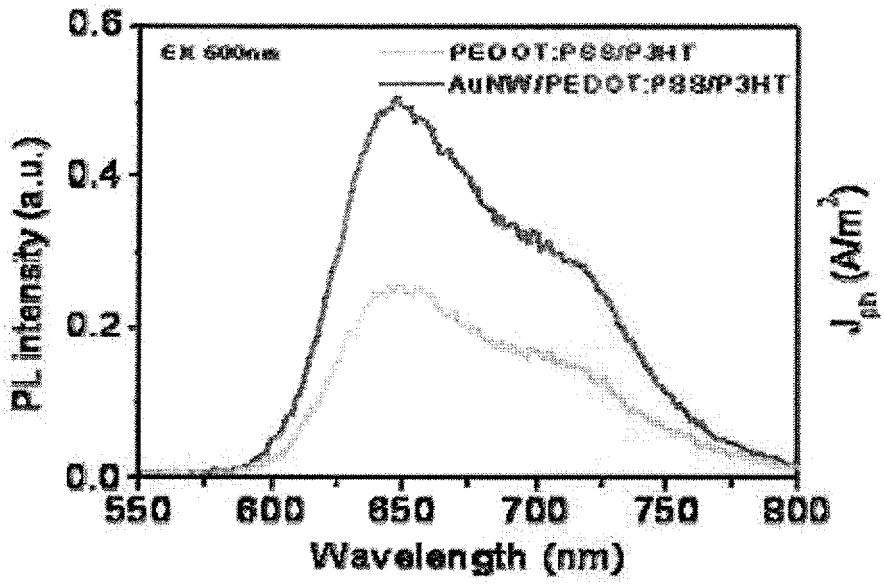

Ex 500nm
PEDOT:PSS/P3HT
AuNW/PEDOT:PSS/P3HT
PL intensity (a.u.)
J_{ph} (A/m^2)
0.0
0.2
0.4
0.6
550
600
650
700
750
800
Wavelength (nm)

Fig. 11

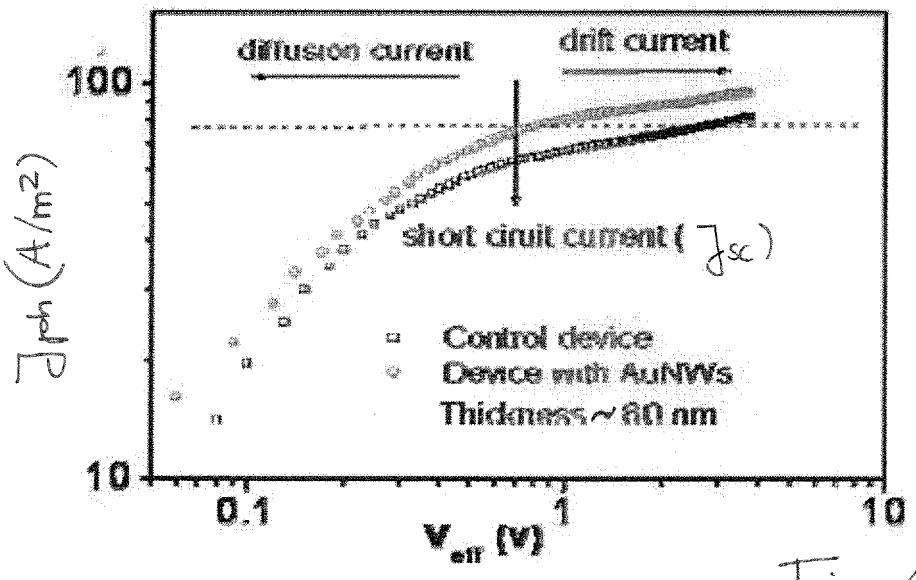
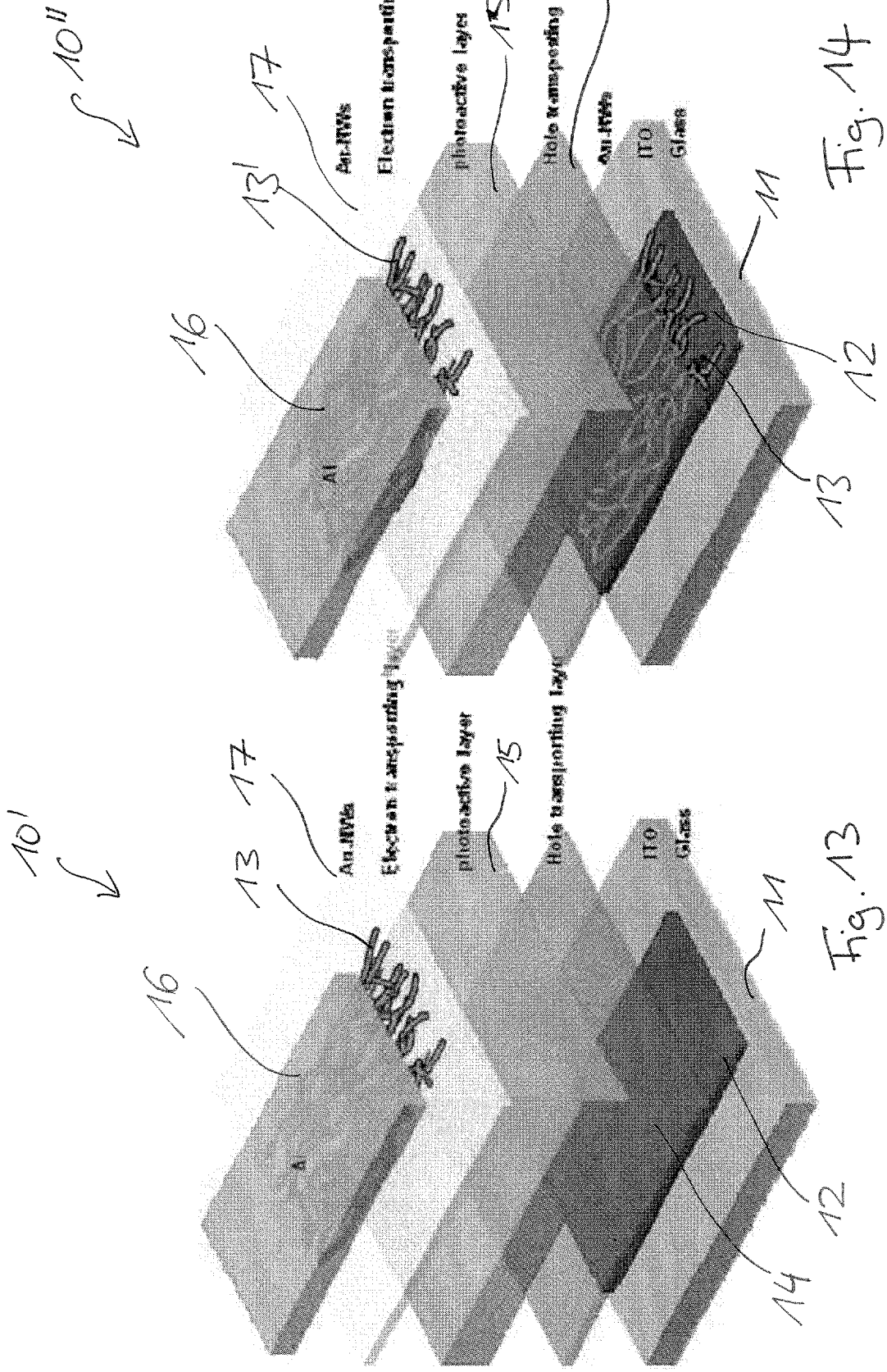

diffusion current
drift current
short circuit current (Jsc)
Control device
Device with AuNWs
Thickness ~ 80 nm
Jph (A/m2)
100
10
0.1
1
10
Veff (V)

Fig. 12


10''
17
13'
Au-NWs
Electron transporting layer
photoactive layer
15
Hole transporting layer
14
Au-NWs
ITO
Glass
11
16
Al
12
13
Fig. 14
10'
17
13
Au-NWs
Electron transporting layer
photoactive layer
15
Hole transporting layer
ITO
Glass
11
16
Al
14
12
Fig. 13

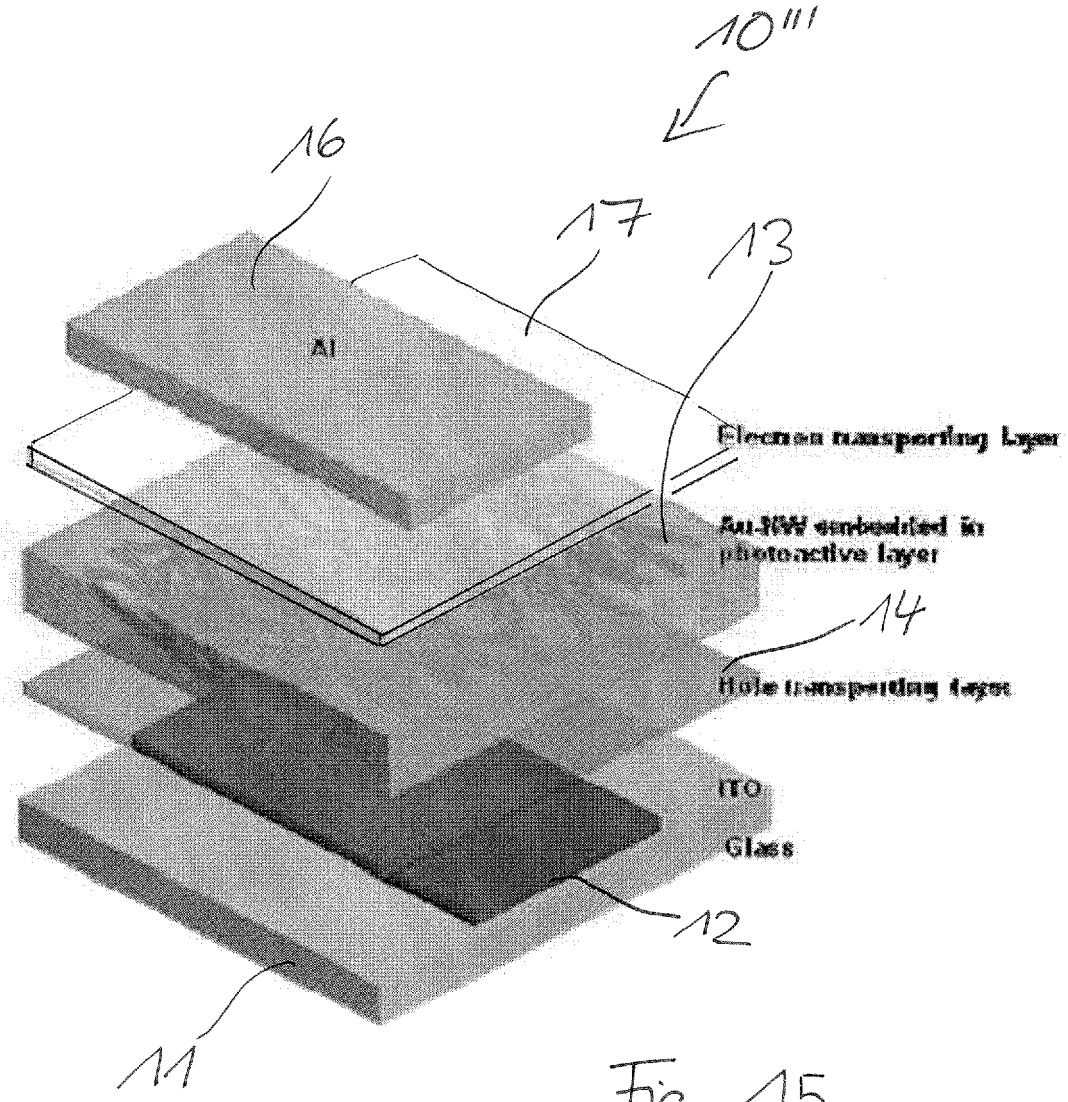

10'''
16
17
13
Al
Electron transporting Layer
Au-NW embedded in photoactive layer
14
Hole transporting layer
ITO
Glass
12
11

Fig. 15

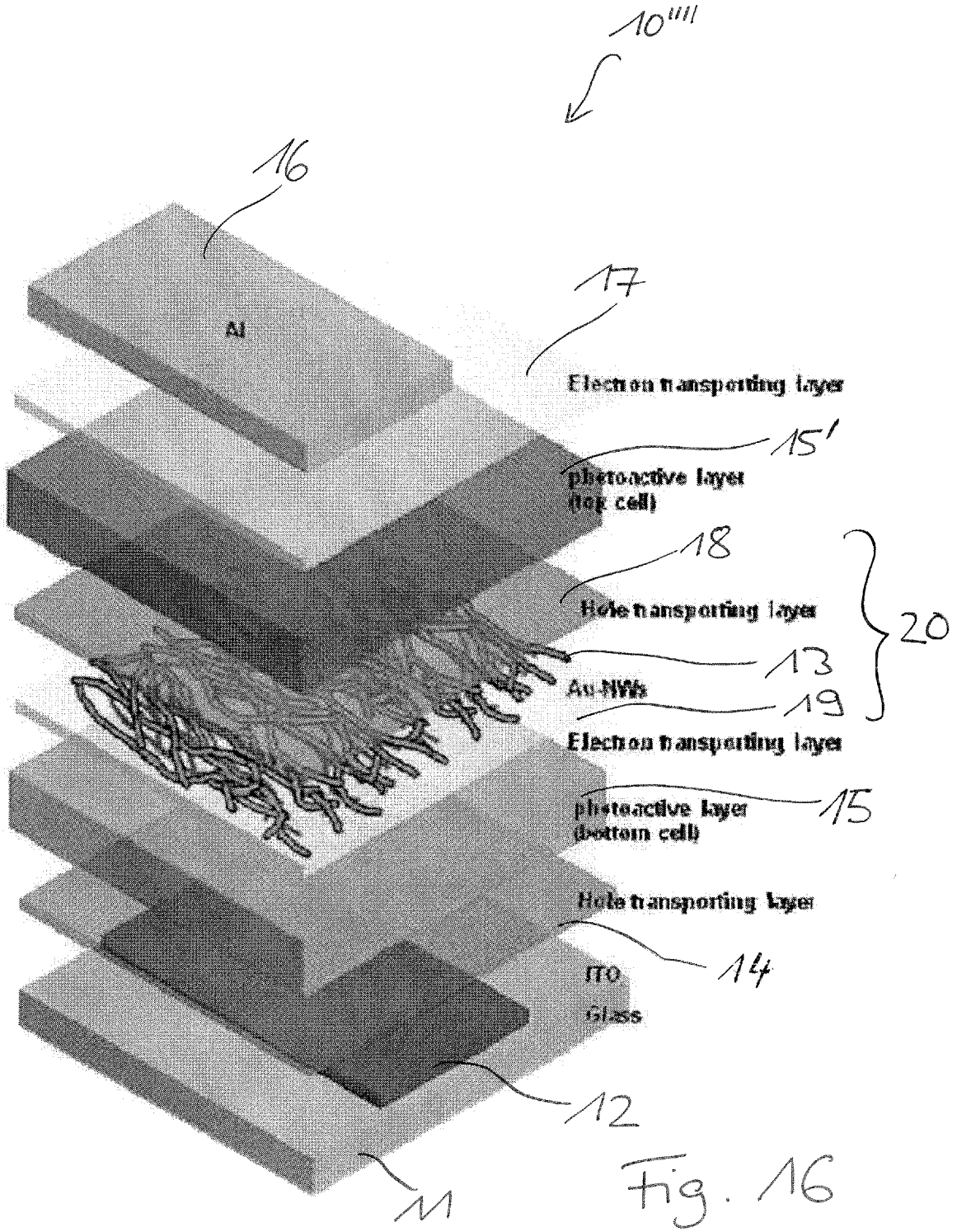

10''''
16
Al
17
Electron transporting layer
15'
photoactive layer
(top cell)
18
Hole transporting layer
13
Au-NWs
19
20
Electron transporting layer
15
photoactive layer
(bottom cell)
Hole transporting layer
14
ITO
Glass
12
11

Fig. 16

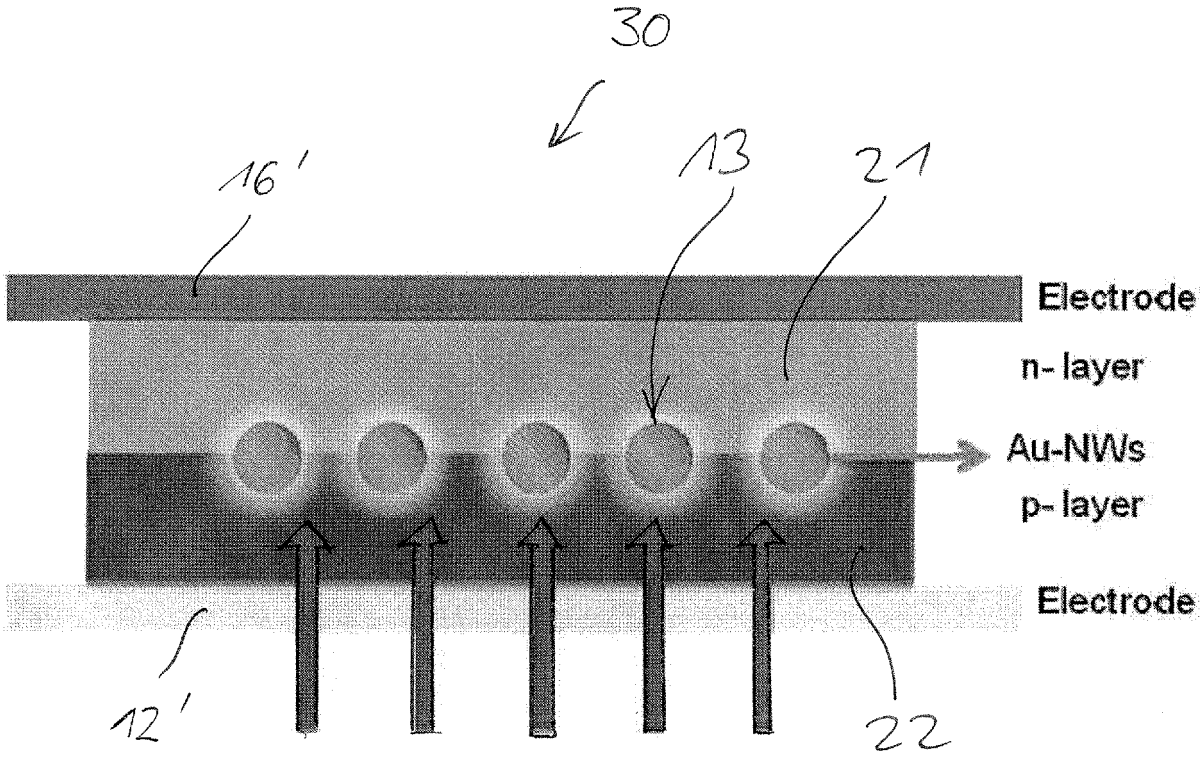


Fig. 17

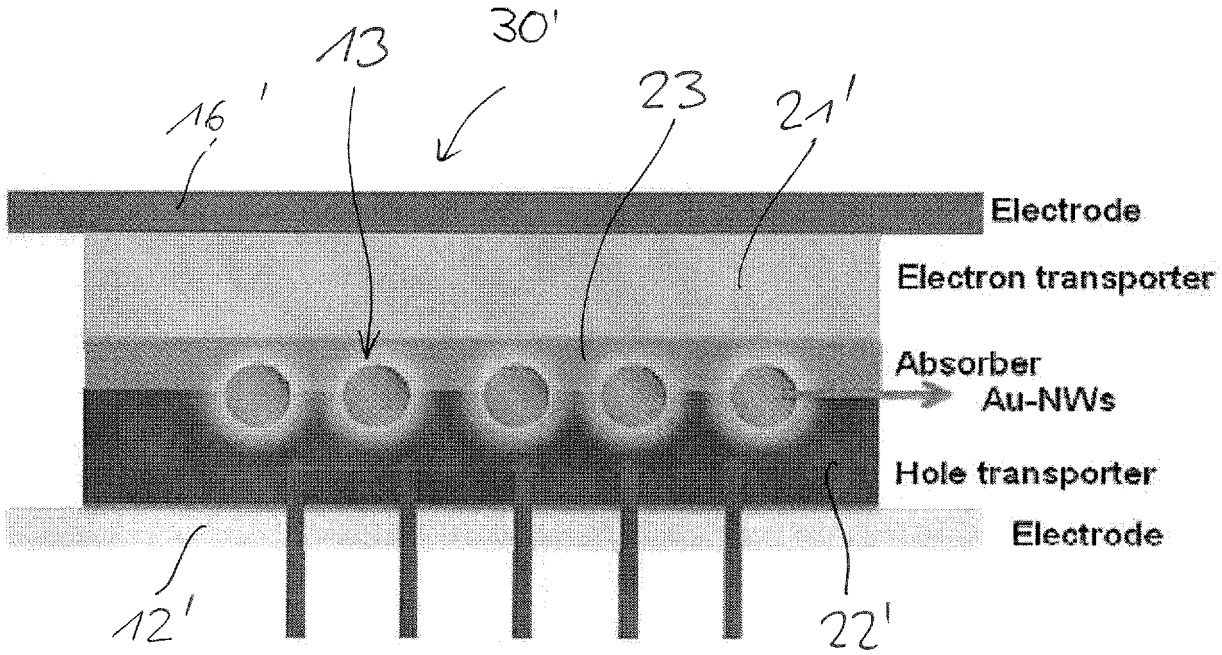

30'
13
16'
23
21'
Electrode
Electron transporter
Absorber
Au-NWs
Hole transporter
Electrode
12'
22'

Fig. 18

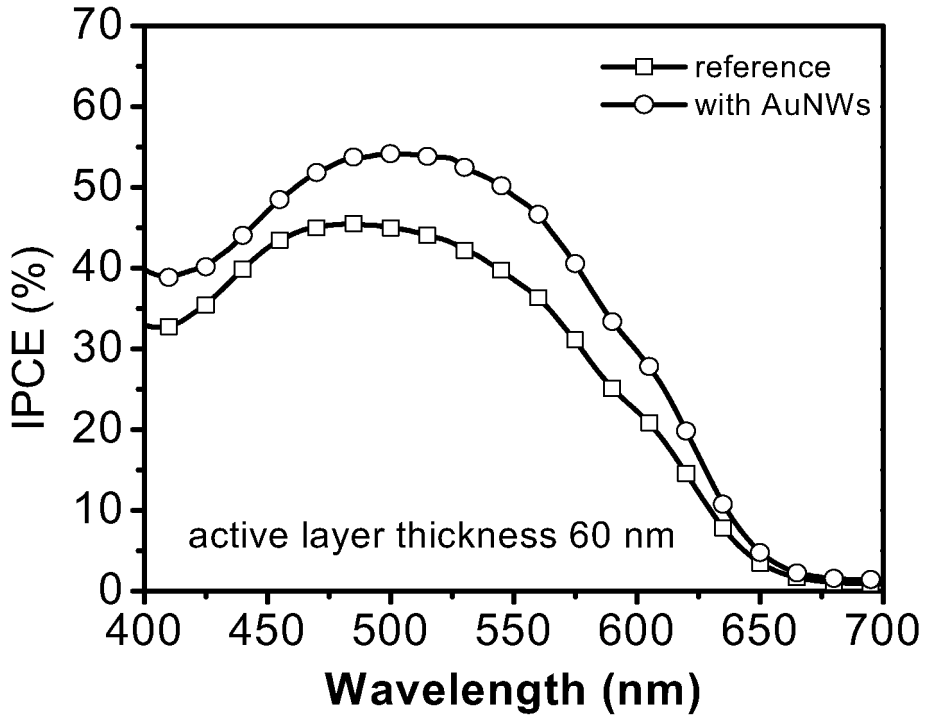

70
60
50
40
30
20
10
0
IPCE (%)
reference
with AuNWs
active layer thickness 60 nm
400
450
500
550
600
650
700
Wavelength (nm)

Fig. 19

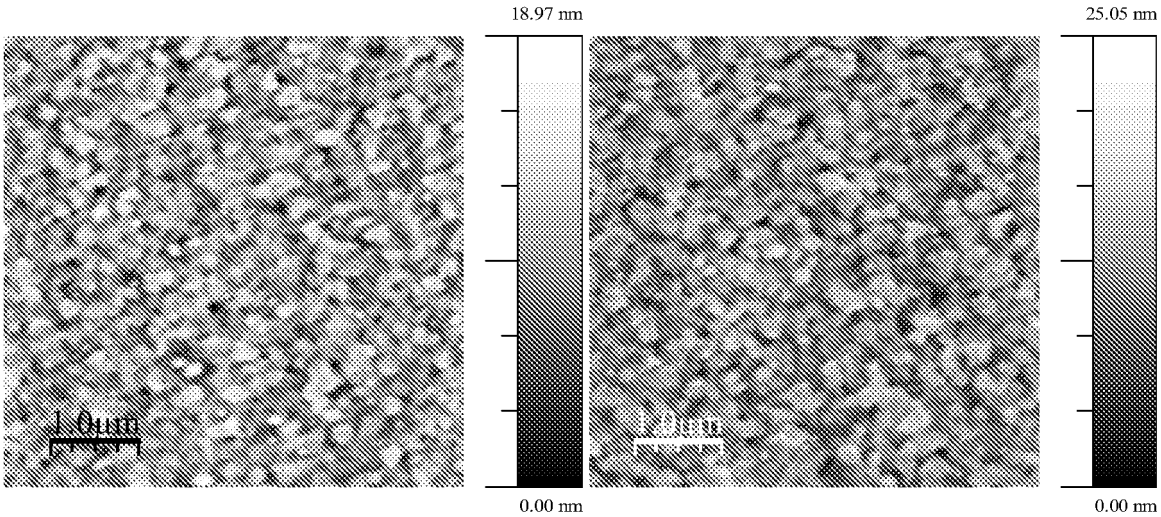

18.97 nm
25.05 nm
1.0μm
1.0μm
0.00 nm
0.00 nm

Fig. 20