

## Supporting File:

# Polyaniline Nanotubes with Rectangular-Hollow-Core and its Self-assembled Surface Decoration: high conductivity and dielectric properties

Ramesh Manda, Chandar Amgoth, Santhosh Kumar, Pradip Paik,\*

School of Engineering Sciences and Technology, University of Hyderabad, Hyderabad 500 046, India.  
Fax: XX XXXX XXXX; Tel: +91-40-2313 4457; E-mail: [ppse@uohyd.ernet.in](mailto:ppse@uohyd.ernet.in), [paik@uohyd.ac.in](mailto:paik@uohyd.ac.in), [pradip.paik@gmail.com](mailto:pradip.paik@gmail.com)

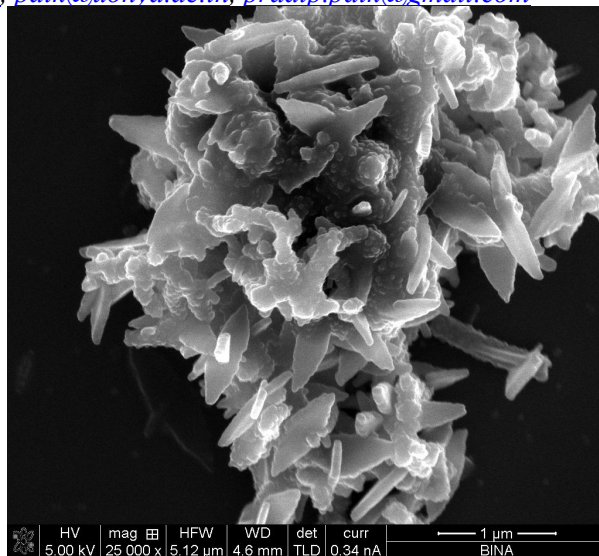


Fig. S1 PANI flakes formed when the molar ratios of [aniline] and [HCl], and [ASP] and [aniline] were kept 1:1 and 1:2, respectively (Batch-1)

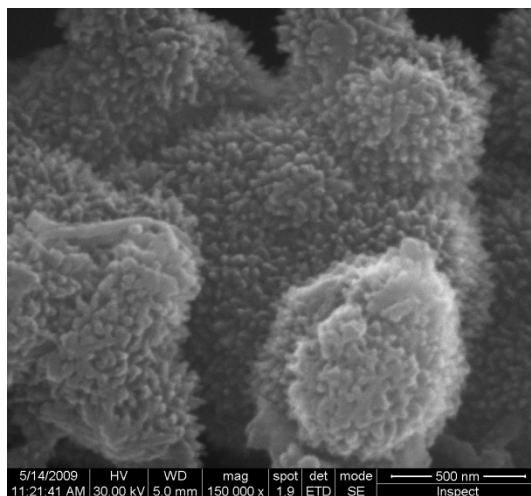


Fig. S2 PANIO synthesized in H<sup>+</sup> only

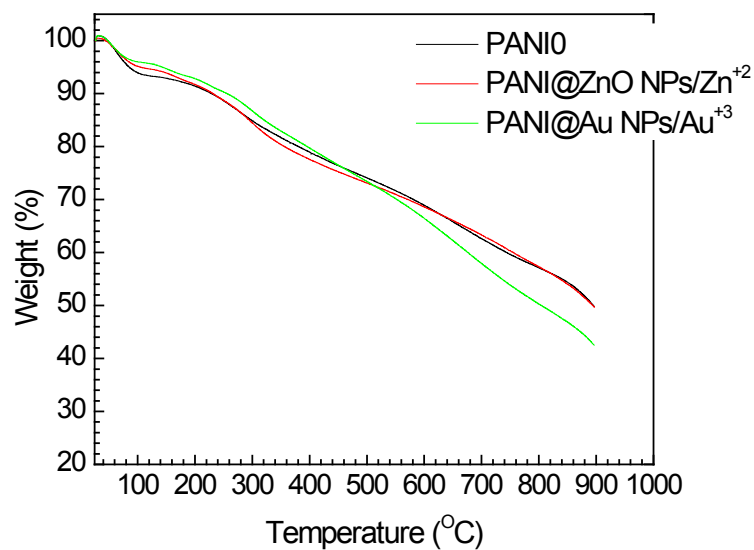


Fig S3: TGA of PANI0, PANI@Au NPs/Au<sup>+3</sup> and PANI@ZnO NPs/Zn<sup>+2</sup>

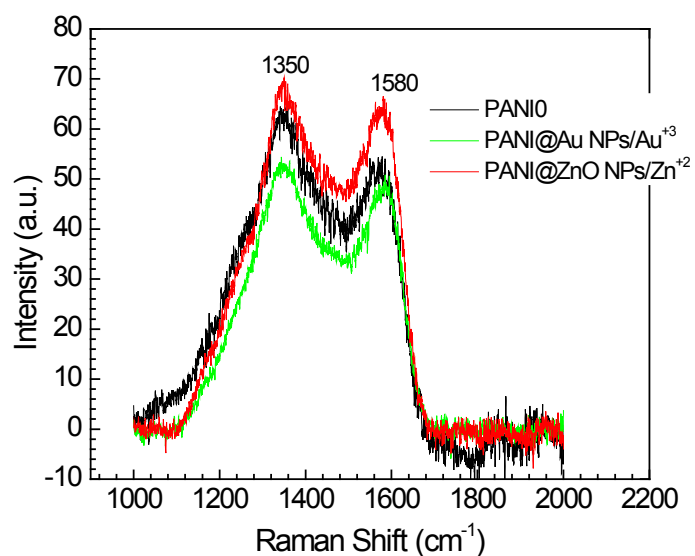
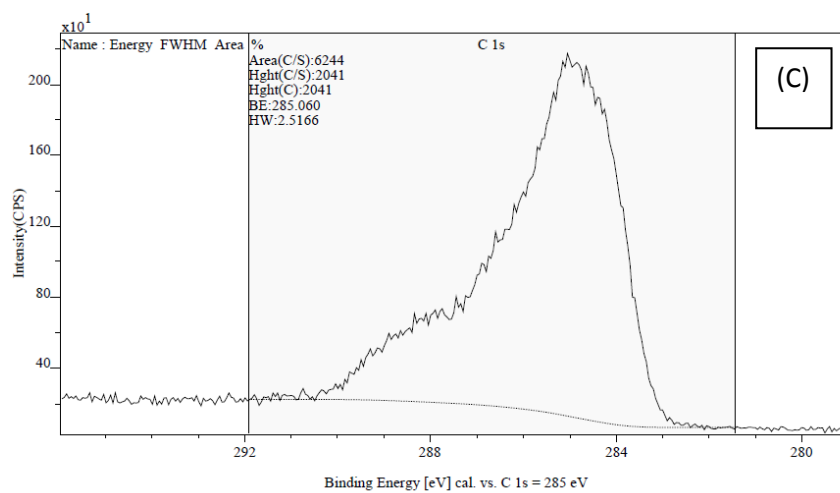
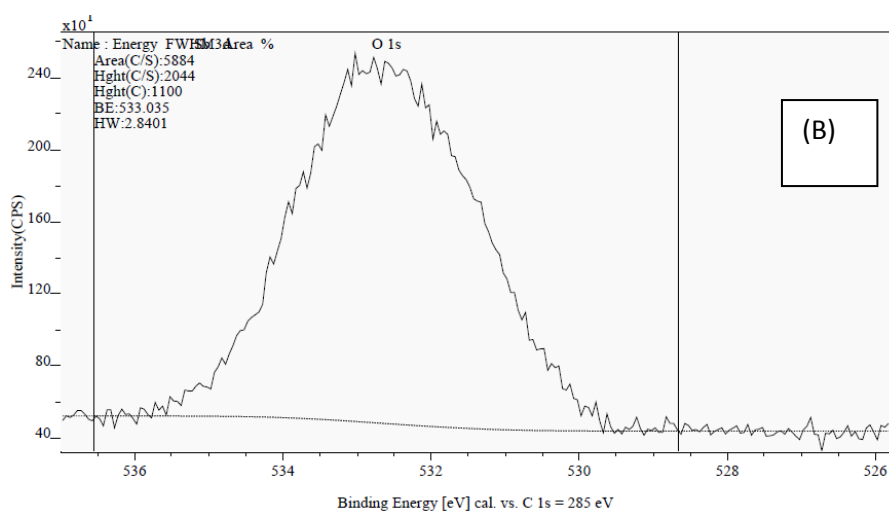
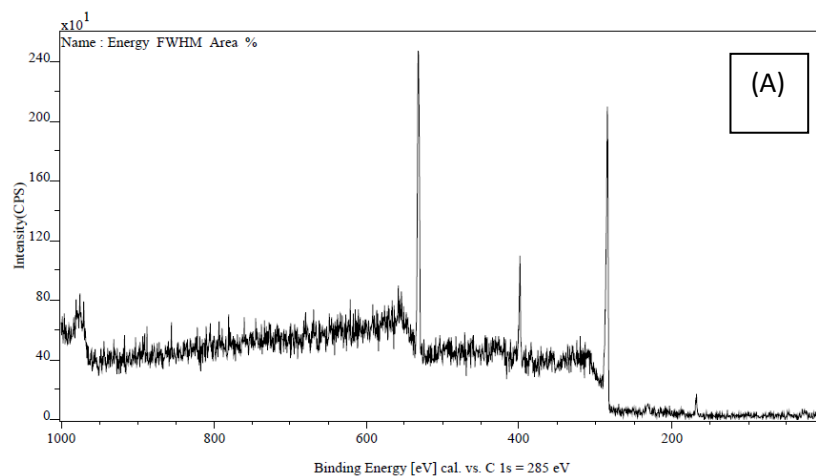


Fig. S4: Raman spectra for PANI0, PANI@AuNPs/Au<sup>+3</sup> and PANI@ZnO-NPs/Zn<sup>+2</sup> indicating the conduction band present



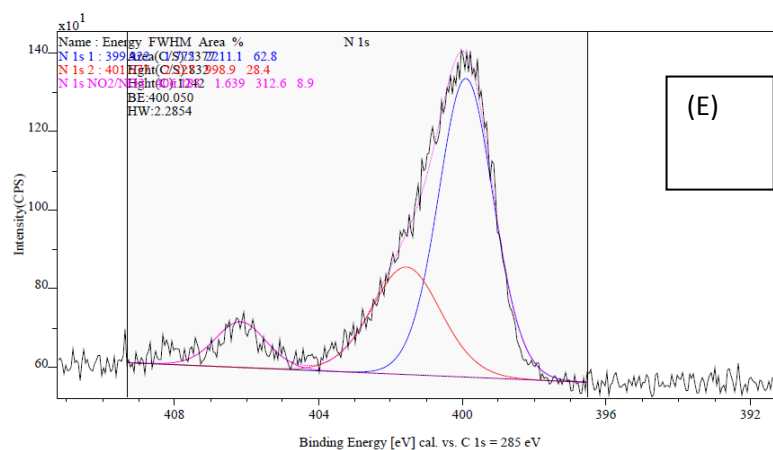
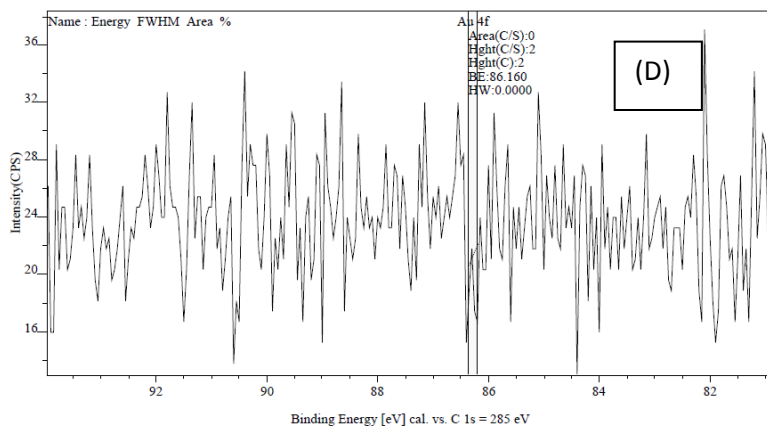
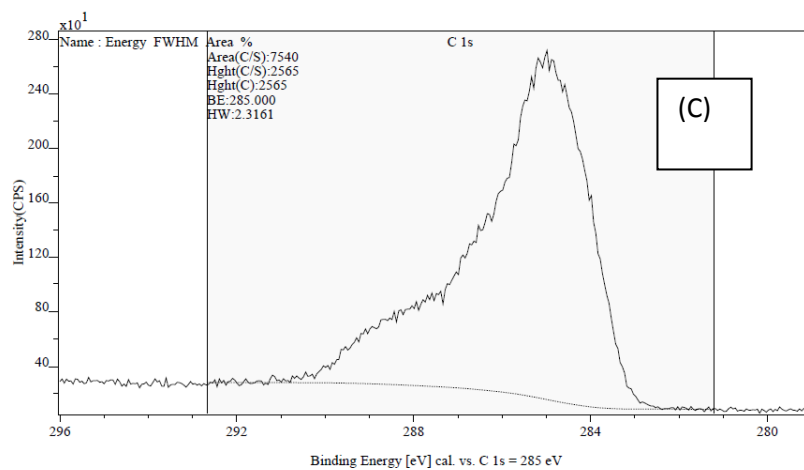
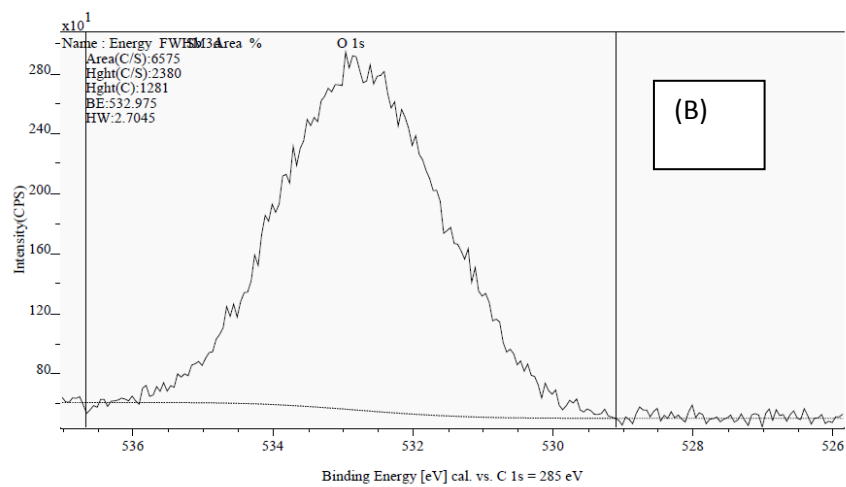
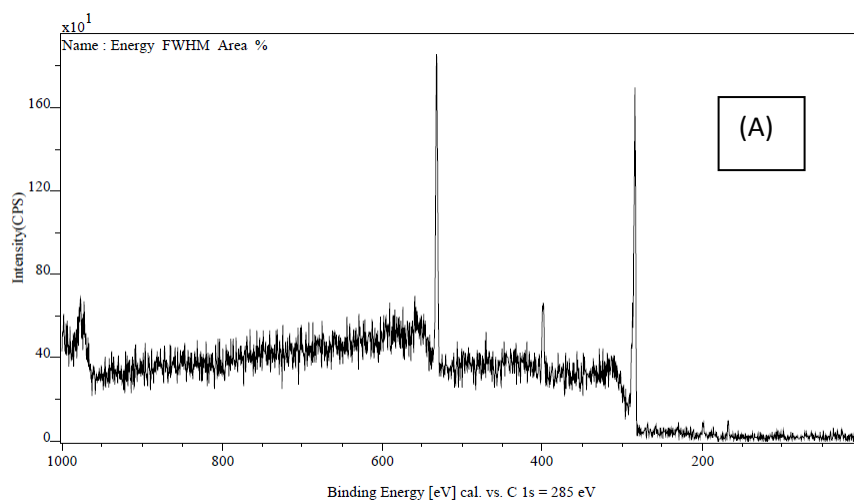


Fig. S5 X-ray photoluminescence spectroscopy for PANI@AuNPs/Au<sup>+3</sup>, (A) full range scan, (B) scan range for oxygen (1s), (C) scan range for carbon (1s), (D) scan range for gold (4f) and (E) scan range for nitrogen (1s)



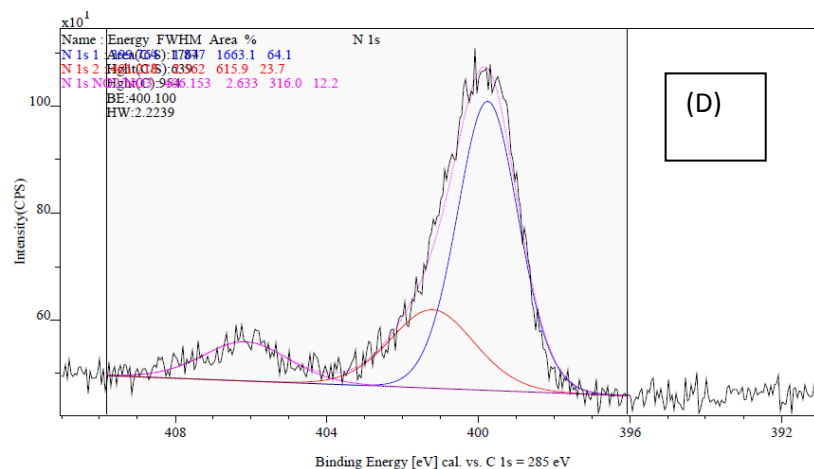
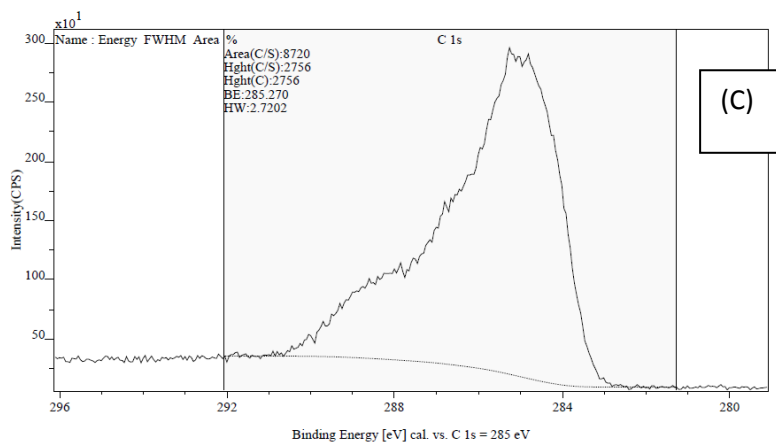
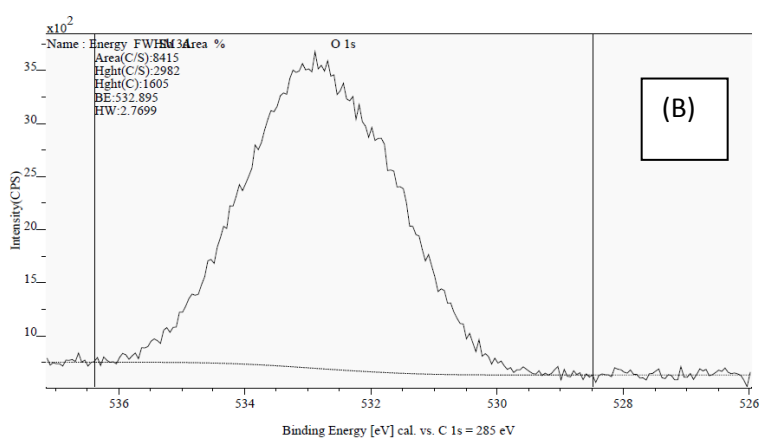
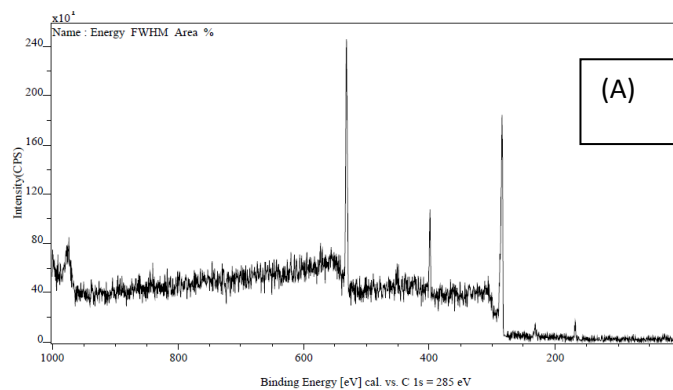


Fig. S6 X-ray photoluminescence spectroscopy for PANI@AuNPs/Au<sup>+3</sup>, (A) full range scan, (B) scan range for oxygen (1s), (C) scan range for carbon (1s), (D) scan range for nitrogen (1s)



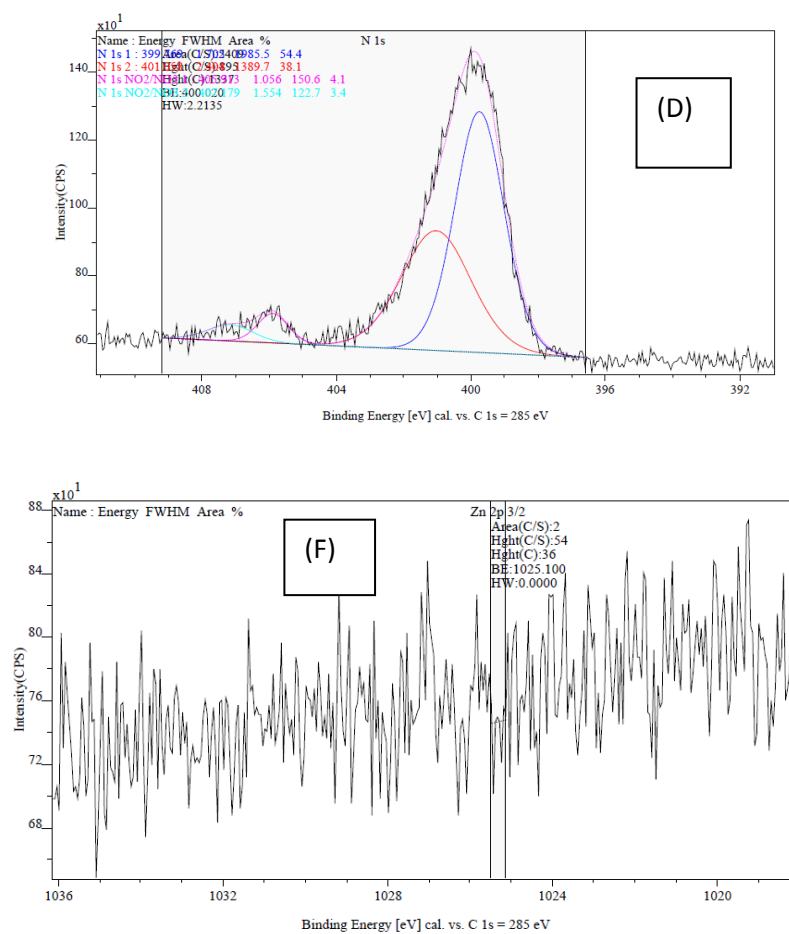


Fig. S7 X-ray photoelectron spectroscopy for PANI@ZnO NPs/Zn<sup>+2</sup>, (A) full range scan, (B) scan range for oxygen (1s), (C) scan range for carbon (1s), (D) scan range for nitrogen (1s) and (E) scan range for Zn (2p<sup>3/2</sup>)



**Table S1.** XPS results for PANIO

Peaks	Position BE (eV)	FWHM (eV)	Raw Area (CPS)	RSF Mass	Atomic Conc %	Atomic Conc%	Mass
N 1s	400.100	2.224	1764.2	0.477	14.007	9.31	10.01
O 1s	532.975	2.704	6574.7	0.780	15.999	20.83	25.58
C 1s	285.000	2.316	7539.8	0.278	12.011	69.87	64.41

**Table S2.** XPS results for PANI@AuNPs/Au<sup>+3</sup>

Peaks	Position BE (eV)	FWHM (eV)	Raw Area (CPS)	RSF Mass	Atomic Conc %	Atomic Conc%	Mass
N 1s	399.860	2.191	1619.1	0.477	14.007	10.05	10.75
O 1s	533.035	2.840	5884.3	0.780	15.999	21.92	26.80
C 1s	285.060	2.517	6243.6	0.278	12.011	68.03	62.45
Au 4f	86.160	0.000	0.0	6.250	196.967	0.00	0.00

**Table S3.** XPS results for PANI@ZnO NPs/Zn<sup>+2</sup>

Peaks	Position BE (eV)	FWHM (eV)	Raw Area (CPS)	RSF Mass	Atomic Conc (%)	Atomic Conc %	Mass
Zn 2p 3/2	1025.100	0.000	2.2	3.730	65.387	0.00	0.00
N 1s	400.020	2.214	2409.4	0.477	14.007	10.58	11.31
O 1s	532.895	2.770	8415.3	0.780	15.999	22.18	27.08
C 1s	285.270	2.720	8720.1	0.278	12.011	67.24	61.61