Appendix

A1. Formula used for calculating recoveries of real sample analysis

For real sample analysis a standard a standard addition method was adopted where the recovery percentage was calculated by formula

$$R\% = \frac{measured\ value}{expected\ value} \times 100$$

Here, the expected value refers to the peak current of DPV plot for the standard sample of the analytes. On the other hand, measured value is the peak current of DPV plot obtained for the spiked real sample.

A2. CV and EIS during immobilization of biomolecules

For biosensing application irradiated UiO-66 samples were immobilized with antibody mouse IgG using the cross-linking agent glutaraldehyde (Gu). The modifiers Gu, antibody mouse IgG and blocking agent BSA were added in layer-by-layer manner. After addition of after each layer cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) were used to verify the successful bioconjugation of the biomolecule, which is shown in Fig. A1. The cross-linking agent glutaraldehyde reacts with various functional groups, including the hydroxyl group present in UiO-66 coordinated with Zr nodes, allowing it to bind to the surface of the metal-organic framework (MOF) and create the necessary sites for biomolecular immobilization. This interaction leads to a decrease in the redox peak current (Ip) and an increase in carrier-transfer resistance, as the linkage of glutaraldehyde may obstruct charge transfer between the electrode and electrolyte. Similarly, the CV response decreased after the antibody was attached to glutaraldehyde (Gu), which was followed by a further decrease in CV after the BSA treatment as shown in the Fig. A1. As a consequence, the semicircle of Nyquist plot also enhanced after every step indicating a rise in the charge transfer resistance. The CV response decreased highest in UiO-66-1 x 10^{12} by 68.86% as compared to samples before immobilization. The subsequent decrease in CV response in UiO-66, UiO-66- 5 x 10^{10}, UiO-66-5 x 10^{11} are 54%, 62.8%, and 51.7%, respectively. As the Fig. A1(h) shows the UiO-66-1 x 10^{12} has the highest charge transfer resistance of ~ 6 kΩ. This result is in well accordance with the CV results.

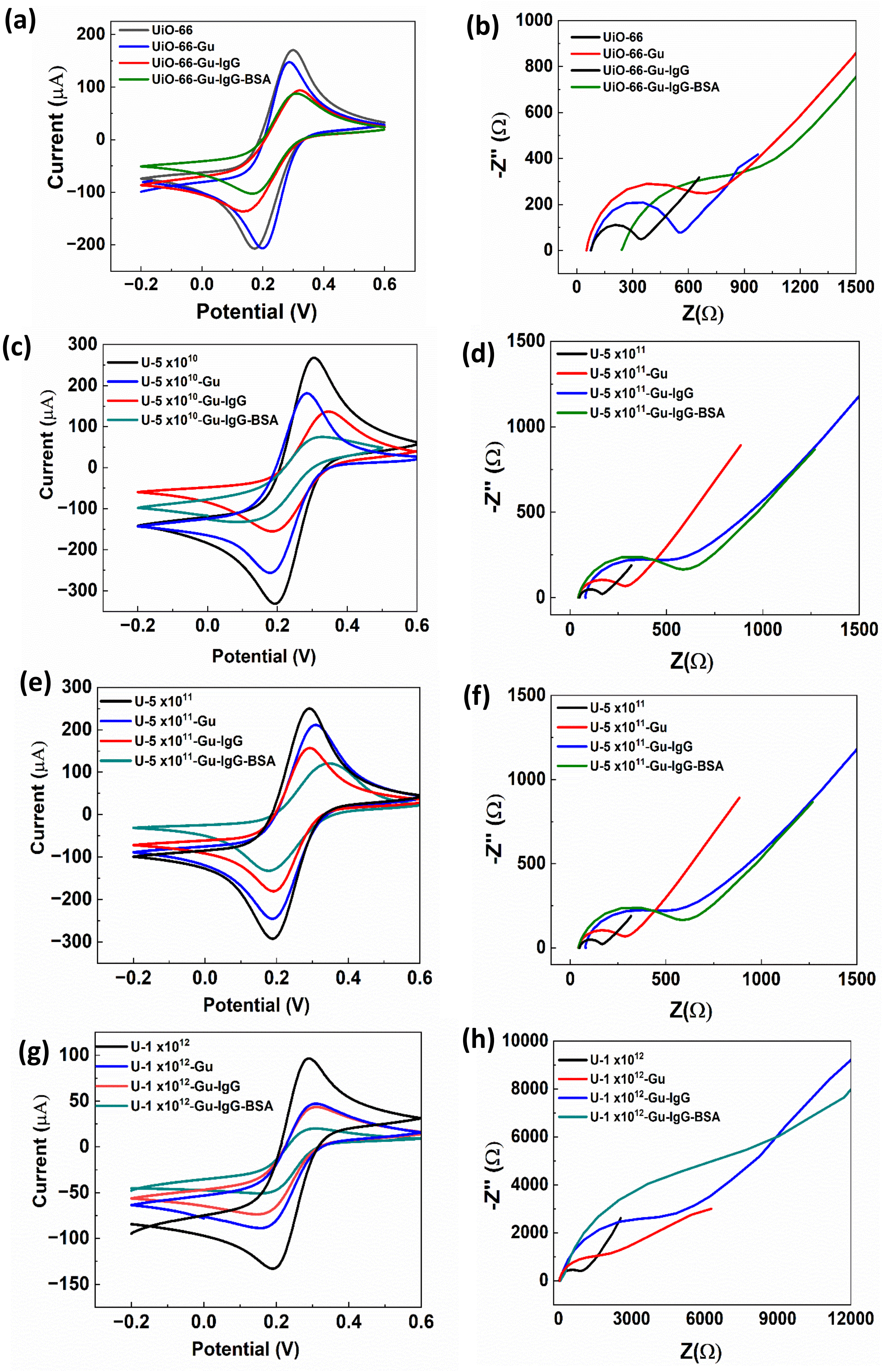

Fig.1 CV and EIS of (a), (b) UiO-66; (c), (d)UiO-66-5 x 10^{10}; (e), (f) UiO-66-5 x 10^{11} and (g), (h) UiO-66-1 x10^{12} after adding glutaraldehyde, antibody mouse IgG and BSA

DrillBit

DrillBit Similarity Report

4	54	A	A-Satisfactory (0-10%) B-Upgrade (11-40%) C-Poor (41-60%) D-Unacceptable (61-100%)
SIMILARITY %	MATCHED SOURCES	GRADE	

LOCATION	MATCHED DOMAIN	%	SOURCE TYPE
1	2D Conductive MetalOrganic Frameworks An Emerging Platform for Electrochemic by Liu-2020	<1	Publication
2	pubs.acs.org	<1	Internet Data
3	mdpi.com	<1	Internet Data
4	Voltamperometric Sensors and Biosensors Based on Carbon Nanomaterials Used for D by Bounegru-2020	<1	Publication
5	Electrochimical determination of uric acid, xanthine and hypoxanthine by poly(xy by Dou-2014	<1	Publication
6	Thesis Submitted to Shodhganga Repository	<1	Publication
7	www.hindawi.com	<1	Internet Data
8	www.dx.doi.org	<1	Publication
9	www.frontiersin.org	<1	Internet Data
10	www.ncbi.nlm.nih.gov	<1	Internet Data
11	Thesis Submitted to Shodhganga Repository	<1	Publication
12	omicsonline.org	<1	Internet Data
13	www.dx.doi.org	<1	Publication

14	Chemiresistive Sensing with Chemically Modified Metal and Alloy Nanoparticles by Francisc-2011	<1	Publication
15	www.ncbi.nlm.nih.gov	<1	Internet Data
16	coek.info	<1	Internet Data
17	Thesis Submitted to Shodhganga Repository	<1	Publication
18	cp.copernicus.org	<1	Internet Data
19	Thesis submitted to shodhganga - shodhganga.inflibnet.ac.in	<1	Publication
20	Template-Assisted Electrochemical Growth of Polypyrrole Nanotubes for Developmen by Palod-2014	<1	Publication
21	moam.info	<1	Internet Data
22	moam.info	<1	Internet Data
23	degruyter.com	<1	Internet Data
24	dovepress.com	<1	Internet Data
25	Dual UV- and pH-Responsive Supramolecular Vesicles Mediated by Host-Guest Intera by Zhang-2016	<1	Publication
26	www.freepatentsonline.com	<1	Internet Data
27	docplayer.net	<1	Internet Data
28	inis.iaea.org	<1	Publication
29	Synthesis and Characterization of Lu(III) Ion Imprinted Polymer by Xiaoq-2011	<1	Publication
30	tinsukiacollege.in	<1	Publication
31	mdpi.com	<1	Internet Data

32	Nanoarchitectured Nitrogen-Doped GrapheneCarbon Nanotube as High Performance El by Faisal-2018	<1	Publication
33	Influence of hydrothermal restructuring conditions on structural properties of m by M-1999	<1	Publication
34	Silver based hybrid nanocomposite for dye removal A novel antibacterial materia by Abdulla-2020	<1	Publication
35	Thesis Submitted to Shodhganga Repository	<1	Publication
36	Thesis Submitted to Shodhganga Repository	<1	Publication
37	Leaching of indium from end-of-life LCD panels via catalysis by synerg by Xie-2019	<1	Publication
38	Thesis submitted to shodhganga - shodhganga.inflibnet.ac.in	<1	Publication
39	coek.info	<1	Internet Data
40	www.sciencedirect.com	<1	Internet Data
41	www.ncbi.nlm.nih.gov	<1	Internet Data
42	www.dx.doi.org	<1	Publication
43	ZIF-67 MOF-derived Unique Double-shelled Co3O4NiCo2O4 Nanocages for S by Tan-2019	<1	Publication
44	coek.info	<1	Internet Data
45	mdpi.com	<1	Internet Data
46	acemap.info	<1	Internet Data
47	IEEE 2017 SBMOIEEE MTT-S International Microwave and Optoelectroni, by Santos, Keila Silva- 2017	<1	Publication
48	www.arxiv.org	<1	Publication

49	www.physics.sk	<1	Publication
50	bmcproc.biomedcentral.com	<1	Internet Data
51	docplayer.net	<1	Internet Data
52	Ideal behavior of the open circuit voltage of semiconductorliquid junctions by Rosenbluth-1989	<1	Publication
53	mdpi.com	<1	Internet Data
54	Structural analysis of 100 relative intense peak of Ba1xCaxTiO3 ceramics by X- by MR-2010	<1	Publication