Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Table 1. Comparison of the current response at different concentrations of nanoparticles (GONP).

Solution $NaClO_4$ (100 mM) + Pyrrole (30 mM)	**GONPs (Concentration in mg mL^{-1})**	**Current (mA)**
$NaClO_4$ +Pyrrole	0.1	0.15
$NaClO_4$ +Pyrrole	0.5	0.19
$NaClO_4$ +Pyrrole	1.0	0.23
$NaClO_4$ +Pyrrole	2.5	0.27
$NaClO_4$ +Pyrrole	5.0	0.32
$NaClO_4$ +Pyrrole	10.0	0.33

Supplementary Table 2. Serum bilirubin levels in apparently healthy persons and jaundice patients, as measured by bilirubin biosensor based on BOx/GONP@PPy/FTO electrode.

Sex	Age (Years)	Healthy persons (µM)	Sex	Age (Years)	Jaundice patient (µM)
M	30	09 ± 0.04	F	35	23 ± 0.02
M	26	11 ± 0.06	F	56	21 ± 0.03
F	54	13 ± 0.01	M	65	30 ± 0.01
M	80	14 ± 0.05	F	41	23 ± 0.02
F	45	08 ± 0.03	M	53	26 ± 0.03
F	50	12 ± 0.01	M	49	31 ± 0.02
M	46	14 ± 0.05	M	63	30 ± 0.03
F	37	16 ± 0.02	F	39	39 ± 0.01
F	18	06 ± 0.07	F	48	41 ± 0.03
M	26	05 ± 0.05	F	39	39 ± 0.02
F	15	0.1 ± 0.03	M	43	39 ± 0.02
F	60	13 ± 0.01	M	52	44 ± 0.03
M	52	04 ± 0.04	F	48	40 ± 0.04
M	45	08 ± 0.02	M	42	38 ± 0.03
F	55	14 ± 0.04	M	36	44 ± 0.02
M	20	0.2 ± 0.03	M	33	49 ± 0.03
M	26	08 ± 0.01	F	47	48 ± 0.01
F	50	07 ± 0.04	M	49	60 ± 0.03
M	60	05 ± 0.04	F	42	55 ± 0.02
F	23	11 ± 0.02	F	28	51 ± 0.03
M	55	05 ± 0.06	F	32	55 ± 0.02
M	55	09 ± 0.02	M	45	59 ± 0.05
F	55	07 ± 0.03	F	44	57 ± 0.03
F	19	0.2 ± 0.02	F	20	52 ± 0.01
M	20	01 ± 0.04	M	46	61 ± 0.03
M	26	02 ± 0.06	F	36	61 ± 0.05

$p < 0.05$

Supplementary Table 3: A comparison table of analytical properties of bilirubin biosensors.

Type of electrochemical sensor	Sensing interface modified electrodes	Detection limit (µM)	Linear range of detection (µM)	Response (s)	Storage stability (months)	Reference
Amperometric	Zirconia coated silica nanoparticles/ Au electrode	0.02	0.02-250	2	4	[17]
Amperometric	Polypyrrole nanoparticles (PPyNPs) and polyaniline nanocomposite film	0.01	0.01 to 320	2	2	[46]
Piezoelectric	Titania film	0.05	0.1-50	1800	3	[13]
Electrochemical	Gold nanoparticles and multiwall carbon nanotubes	1.0	1 to 100	5	2	[44]
Amperometric	Polyethyleneimine (PEI) film	0.04	0.1 to 50	5	2	[16]
Amperometric	GONP@PPy/FTO electrode	0.01	0.01 to 500	2	5	Present