

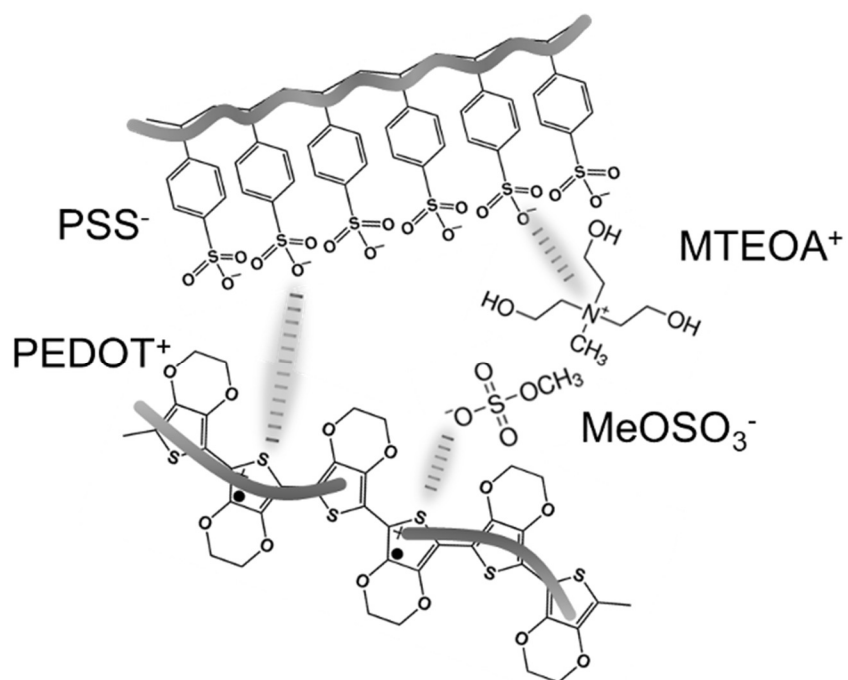
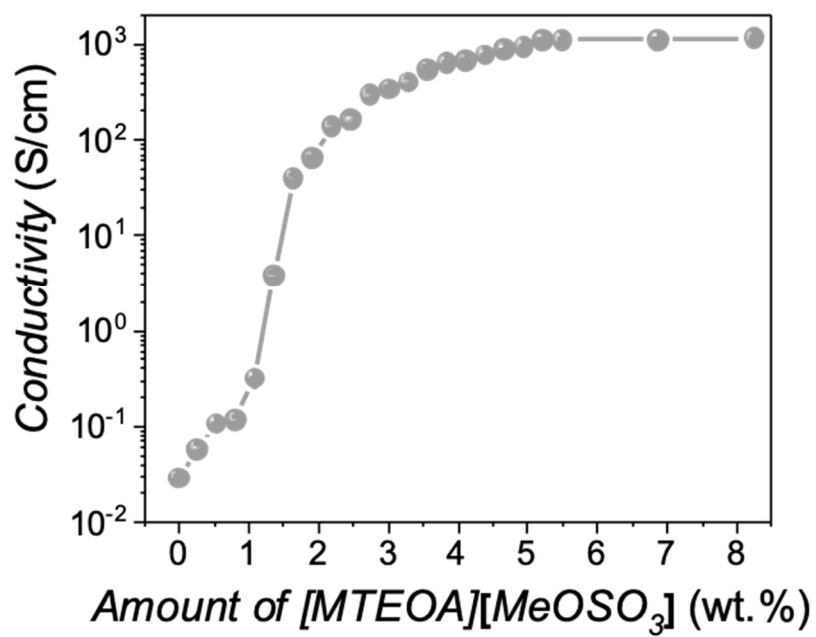
FIG. 1A**FIG. 1B**

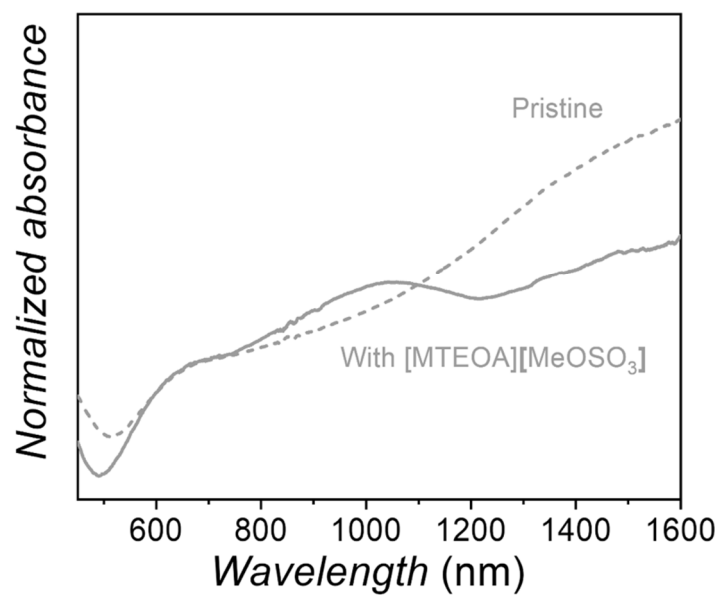
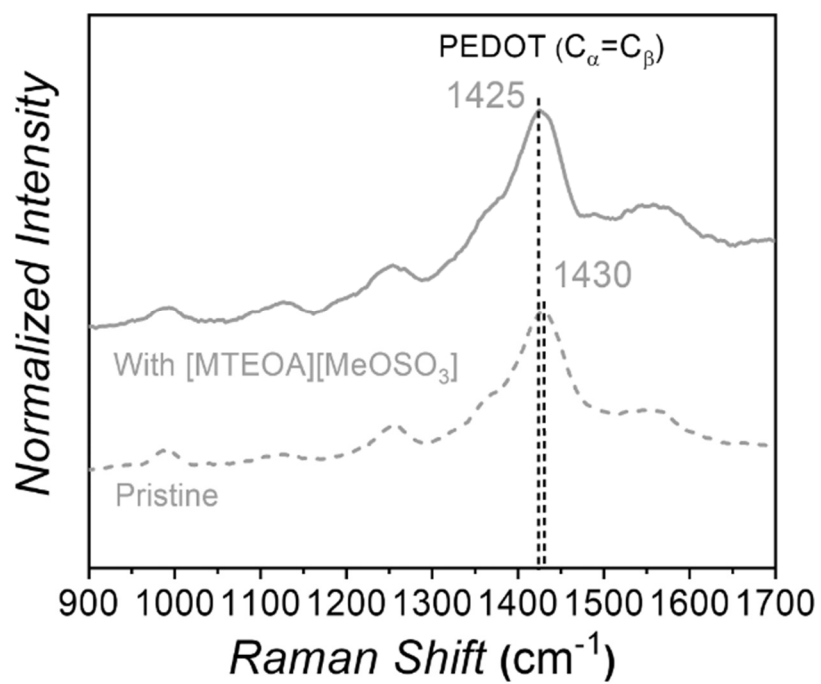
FIG. 1C**FIG. 1D**

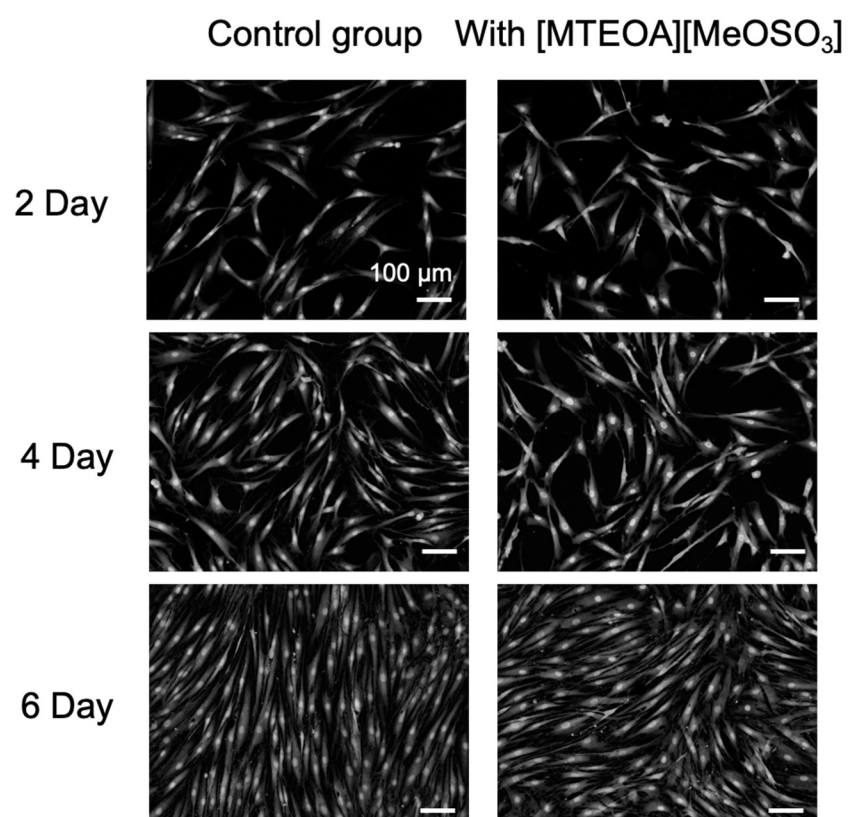
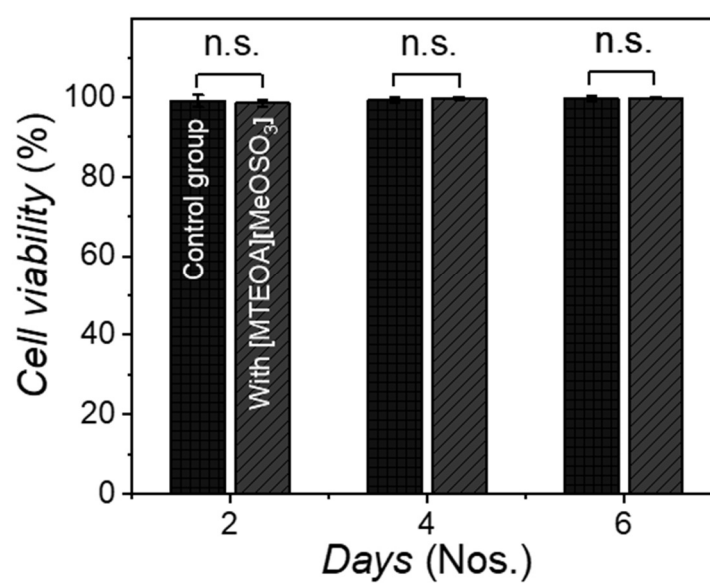
FIG. 2A**FIG. 2B**

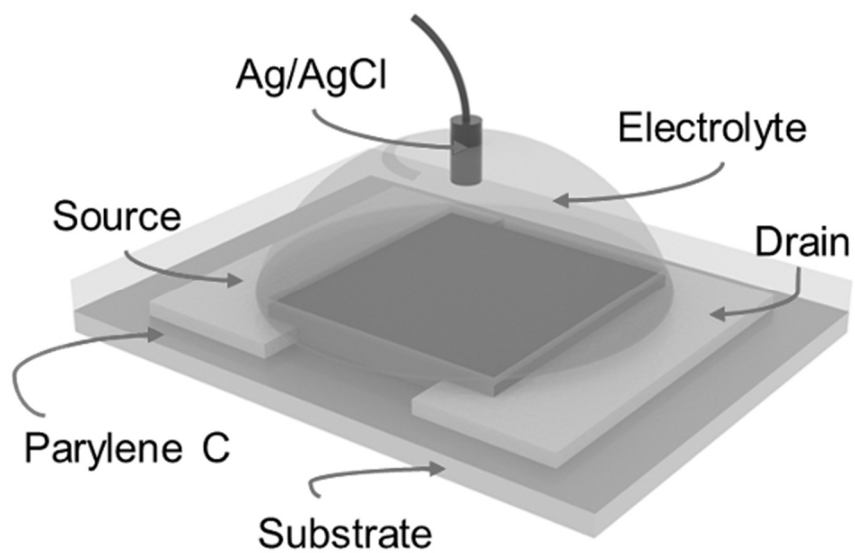
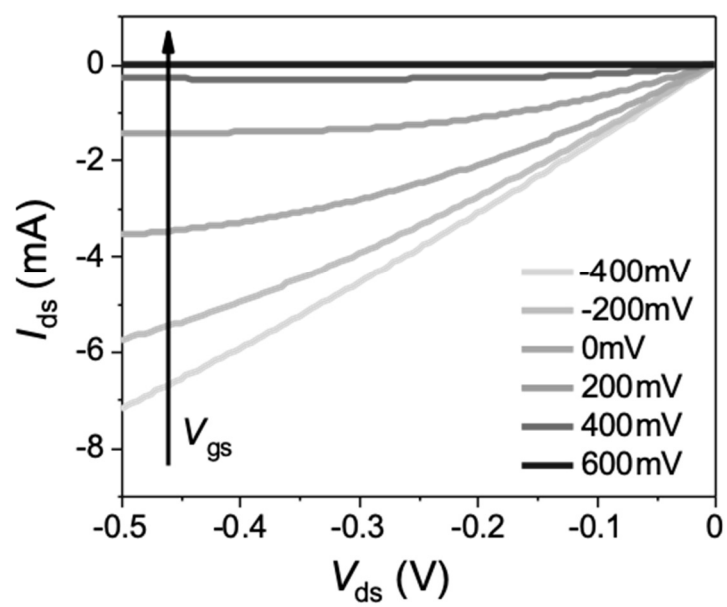
FIG. 3A**FIG. 3B**

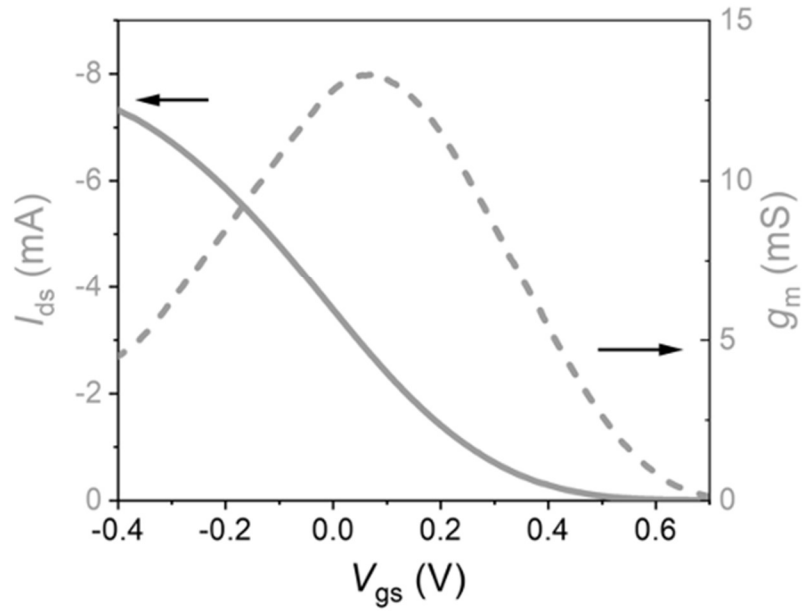
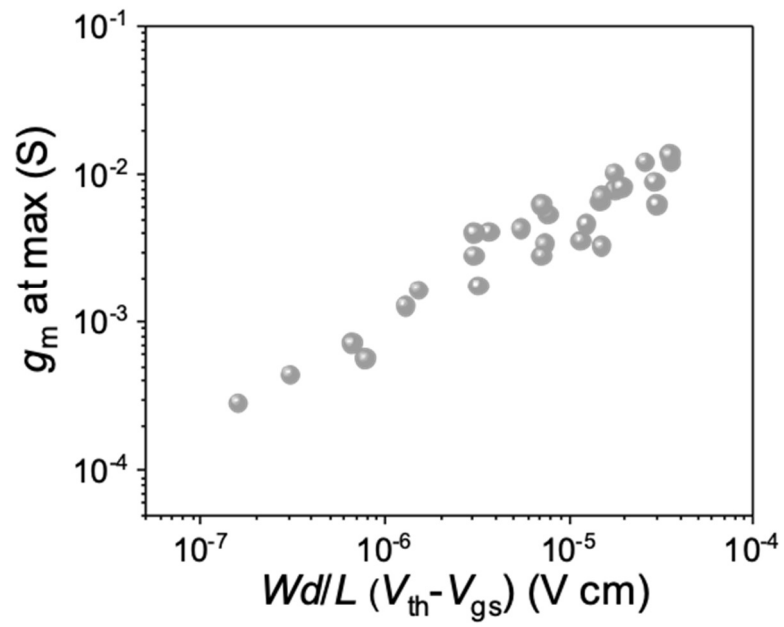
FIG. 3C**FIG. 3D**

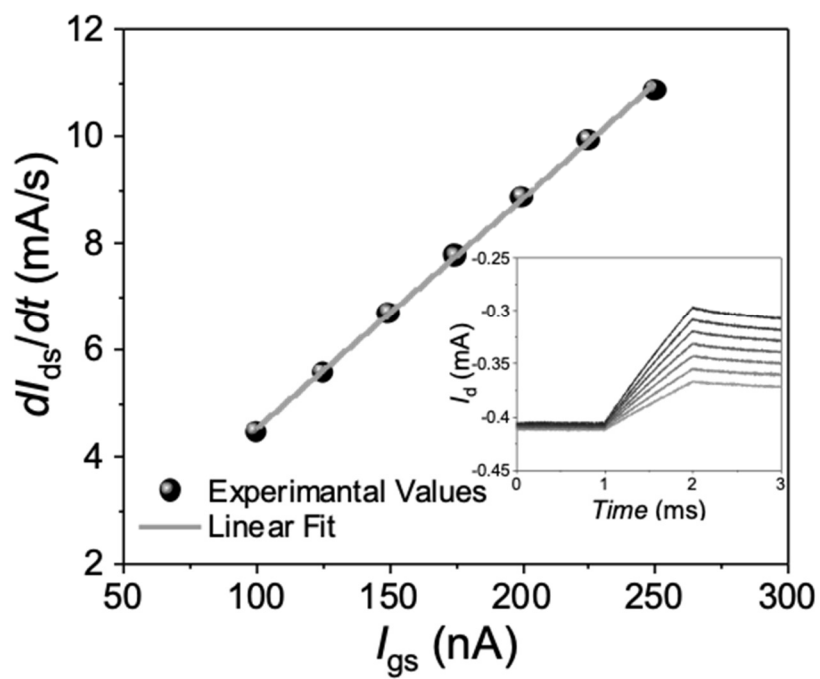
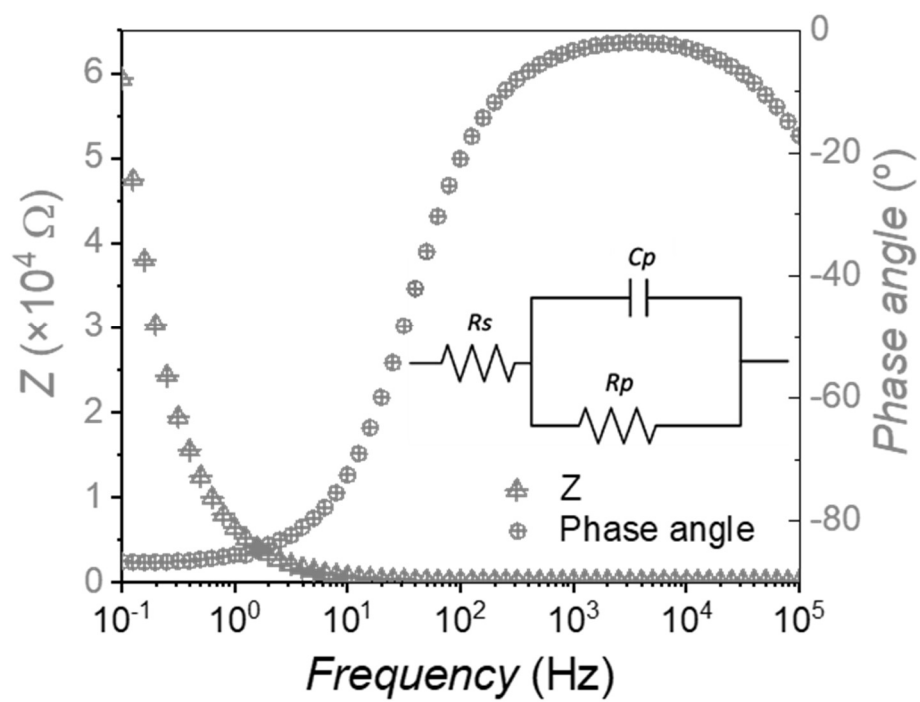
FIG. 3E**FIG. 3F**

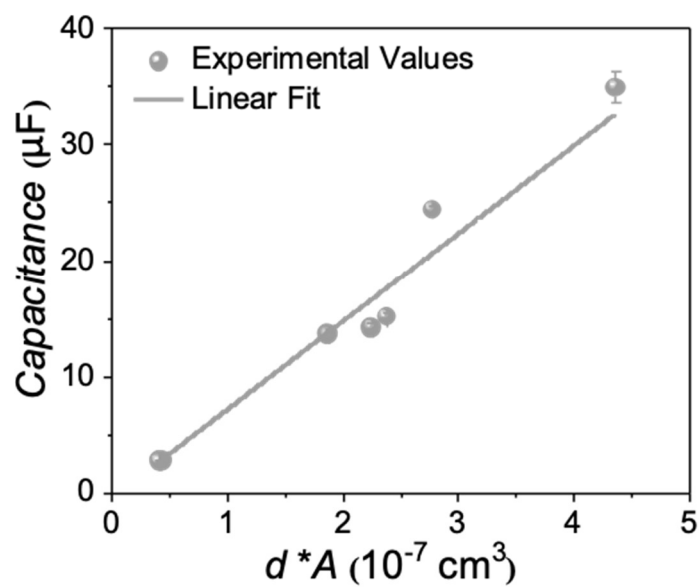
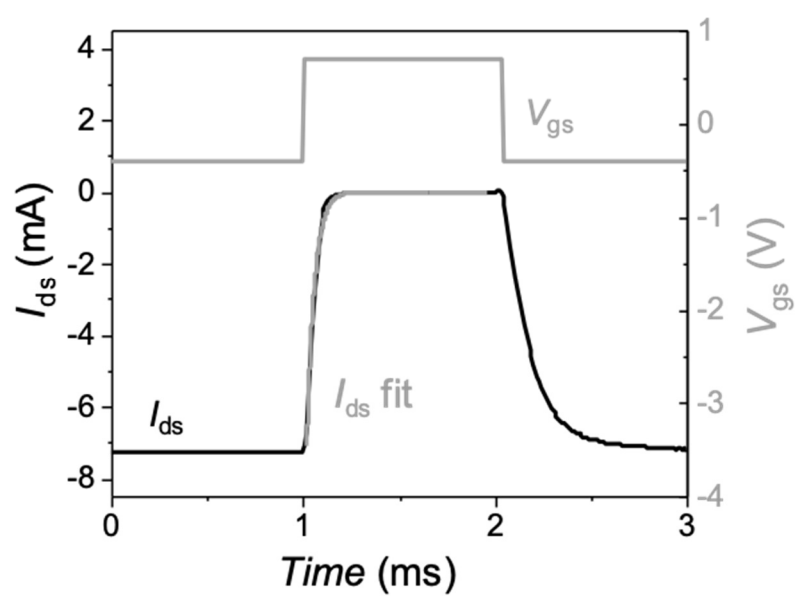
FIG. 3G**FIG. 3H**

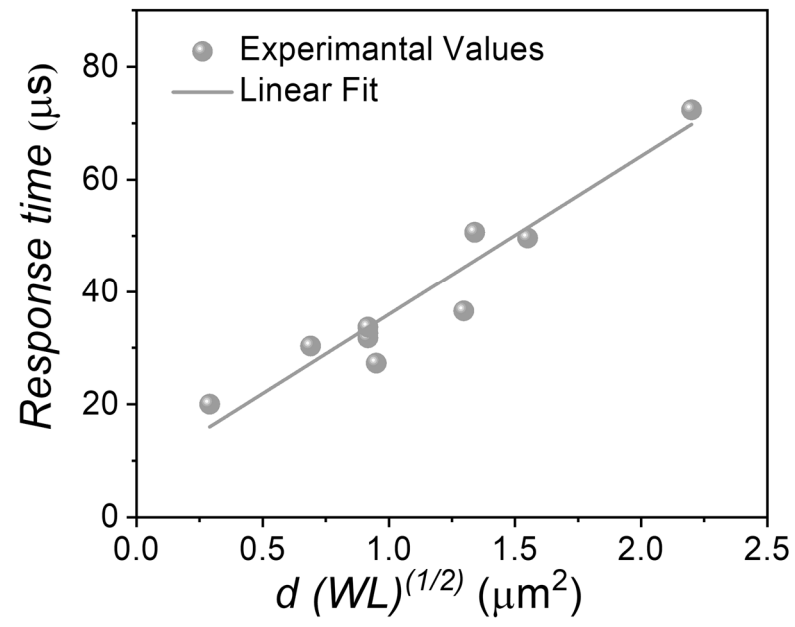
FIG. 3I

FIG. 3J

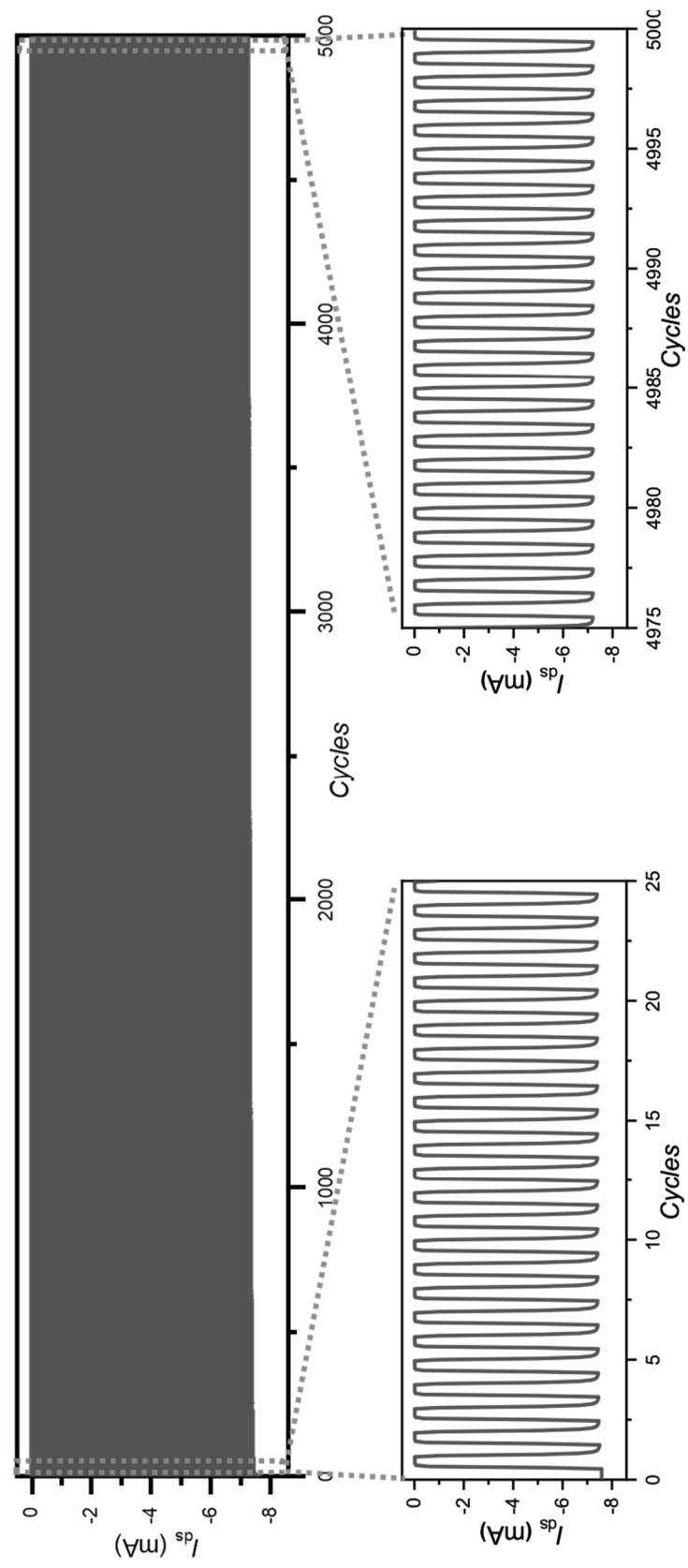


FIG. 3K

Active material	Main additive	Main additive content	SDS	Biocompatibility	W/L (μm/μm)	Thickness dW/L (nm)	Thickness dW/L (μm)	V _{ds} (V)	g _m (mS)	g _m /(Wd/L) (mS μm ⁻¹)	μC* (F cm ⁻² V ⁻¹ s ⁻¹)	C* (F cm ⁻²)	μ (cm ² V ⁻¹ s ⁻¹)
Pristine PEDOT:PSS	--	--	(Aqueous solution) Warning. H315 Causes skin irritation.	(Film) Claimed to be biocompatible.	1000/100	200	2.00	-1	0.018	0.009	0.03	--	--
PEDOT:PSS/(4-sorbitol d-sorbitol		40%	Not a hazardous substance or mixture.	Claimed to be biocompatible.	500/5	2000	200	-1	32.3	0.1615	--	--	--
PEDOT:PSS/glycerol	glycerol	5 v/v.%	Not a hazardous substance or mixture.	Claimed to be biocompatible.	80/5	~70	1.12	-1	0.9	0.8	--	--	--
PEDOT:PSS/PEG/glycopolypolyethylene glycol, glycerol		4 v/v.%, 5 v/v.%	Not a hazardous substance or mixture.	Claimed to be biocompatible.	2000/8000	300	0.08	--	0.12	1.6	--	--	--
PEDOT:PSS/[MTEOA][MeOSO ₃]	[MTEOA][MeOSO ₃]	3.5 wt. %	Not a hazardous substance or mixture.	Yes, proved to be biocompatible in this study.	100/20	69	0.35	-1	7.766	22.3 ± 4.5	283.80 ± 29.66	75.87 ± 6.14	1.659 ± 1.131
PEDOT:PSS/AV gel/DMSO/glycerol	DMSO	3.3 wt. %	Not a hazardous substance or mixture.	No. > 0.52 wt. % DMSO is toxic to fibroblasts cells.	1000/250	40000	160	-1	250	1.56	--	--	2.59
PEDOT:PSS/DMSO	DMSO	10 v/v. %	Not a hazardous substance or mixture.	No. > 0.52 wt. % DMSO is toxic to fibroblasts cells.	30	115	3.45	-1	6	1.74	--	--	--
PEDOT:PSS/EG	EG	25v/v. %	Warning. H302 Harmful if swallowed. H320 Causes eye irritation.	Have not been reported to be biocompatible yet.	80/20	190	0.76	-1	4.028	5.3	100 ± 7	31	3.22
PEDOT:PSS/EG	EG	5 v/v. %	Warning. H302 Harmful if swallowed. H320 Causes eye irritation.	Have not been reported to be biocompatible yet.	10/5	400	0.8	-1	5.2	6.5	--	--	--
PEDOT:PSS/EG	EG	5 wt. %	Warning. H302 Harmful if swallowed. H320 Causes eye irritation.	Have not been reported to be biocompatible yet.	100/20	110	0.55	-1	5.17	9.4	--	--	--
PEDOT:PSS/EG	EG	5 v/v. %	Warning. H302 Harmful if swallowed. H320 Causes eye irritation.	Have not been reported to be biocompatible yet.	50/50	500	0.5	-1	5	10	75 ± 51	39	1.9 ± 1.3
PEDOT:PSS/EG	EG	5 v/v. %	Warning. H302 Harmful if swallowed. H320 Causes eye irritation.	Have not been reported to be biocompatible yet.	100/10	100	1	--	13	13	--	--	--
PEDOT:PSS/DBSA	DBSA	4 v/v. %	Danger. H314 Causes severe skin burns and eye damage.	Have not been reported to be biocompatible yet.	20/10	20000	40	-1	1.4	0.035	--	--	--
PEDOT:PSS/[EMIM][TCM]	[EMIM][TCM]	1.5 wt. %	Substance not yet fully tested.	Have not been reported to be biocompatible yet. And it is potentially toxic. ^{ab}	1000/100	200	2.00	-1	14.2	≈7.1	335	87	3.8
PEDOT:PSS/[EMIM][Cl]	[EMIM][Cl]	1.1 wt. %	Warning. H302 Harmful if swallowed. H319 Causes serious eye irritation.	Have not been reported to be biocompatible yet. And it is potentially toxic. ^{ab}	1000/250	400	1.60	-1	11.6	4.91 ± 0.30	84 ± 17	37.3 ± 3.1	2.26 ± 0.45
PEDOT:PSS/TX-100	Triton X-100	5.2 wt. %	Danger. H318 Causes serious eye damage.	No. 0.2% TX-100 can kill human dermal fibroblasts cells.	1000/200	2000	10.00	-1	48.7	4.9	91 ± 19	38	2.4 ± 0.5

FIG. 3L

Active material	Main additive	Main additive content	W/L ($\mu\text{m}/\mu\text{m}$)	Thickness (nm)	$d \text{ (WL)}^{1/2}$ (μm^2)	Rise time τ (μs)	$\tau/[d \text{ (WL)}^{1/2}]$ ($\mu\text{s}/\mu\text{m}^2$)	Refs.
Pristine PEDOT:PSS	—	—	1000/100	200	63.25	30000	474.3	1
PEDOT:PSS/EG	EG	5 v/v. %	10/10	400	4.00	102	25.5	8
PEDOT:PSS/EG	EG	5 wt. %	10/20	110	1.56	42.39	27.2	This work
PEDOT:PSS/[MTEOA][MeOSO ₃]	[MTEOA][MeOSO ₃]	3.5 wt. %	100/20	69	3.11	59.46	28.1 $\pm$ 3.0	This work
			100/10		2.20	40.57		

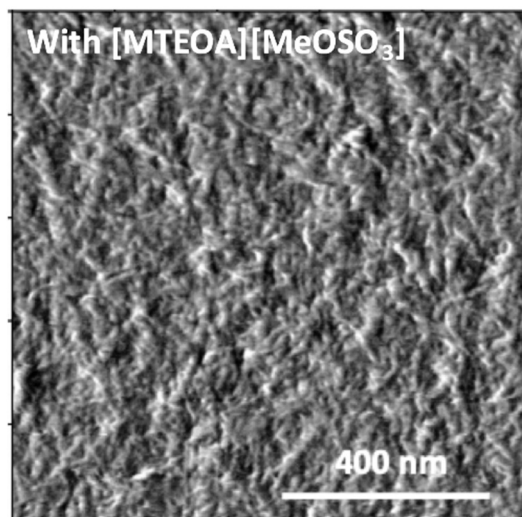
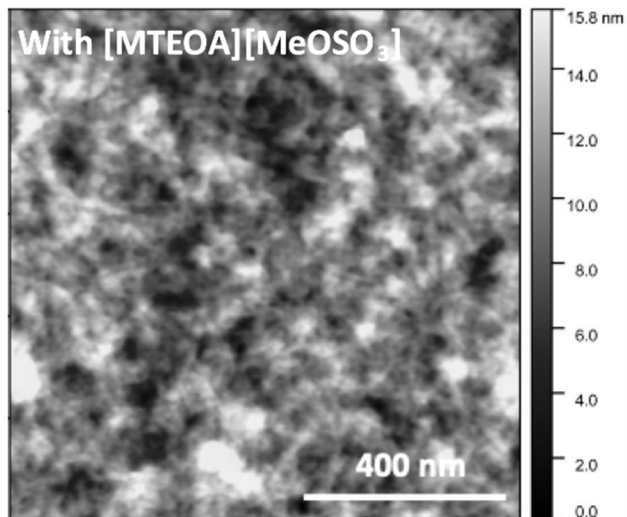
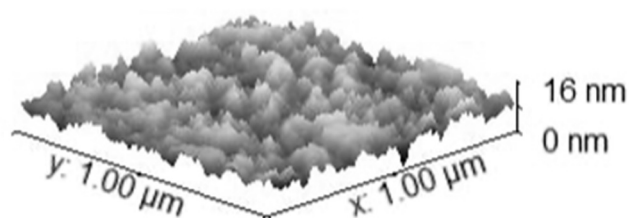
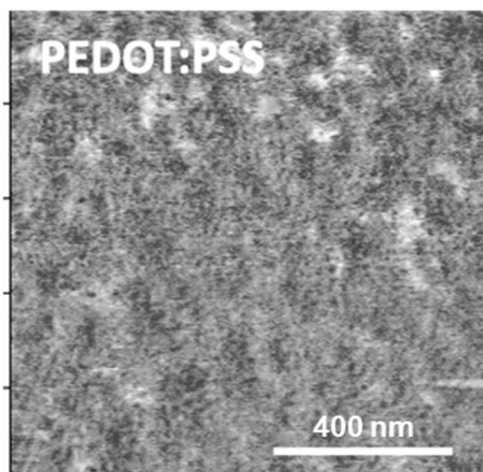
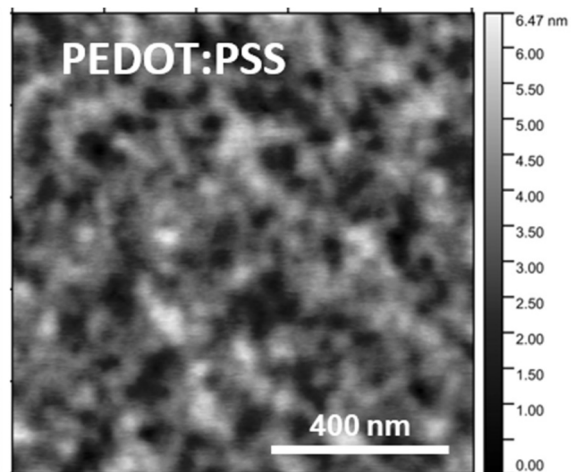
FIG. 4A**FIG. 4B****FIG. 4C****PEDOT:PSS/[MTEOA][MeOSO₃]****FIG. 4D****FIG. 4E**

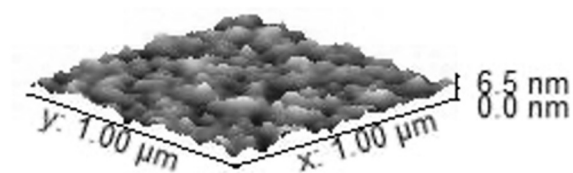
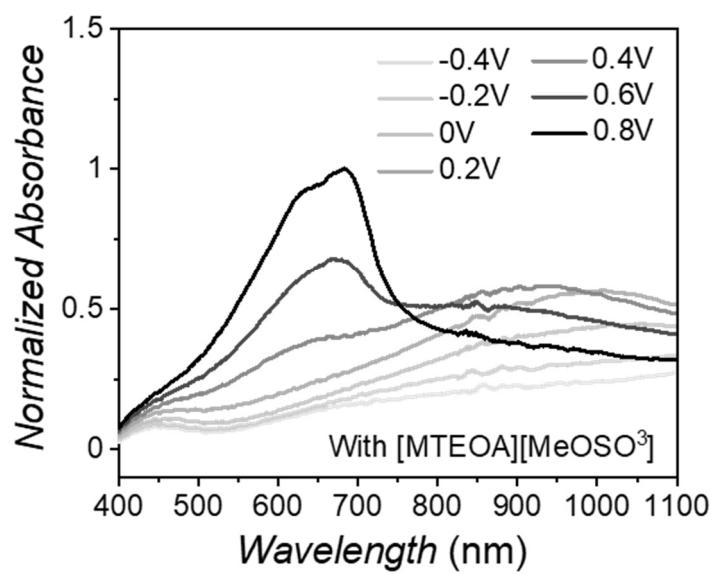
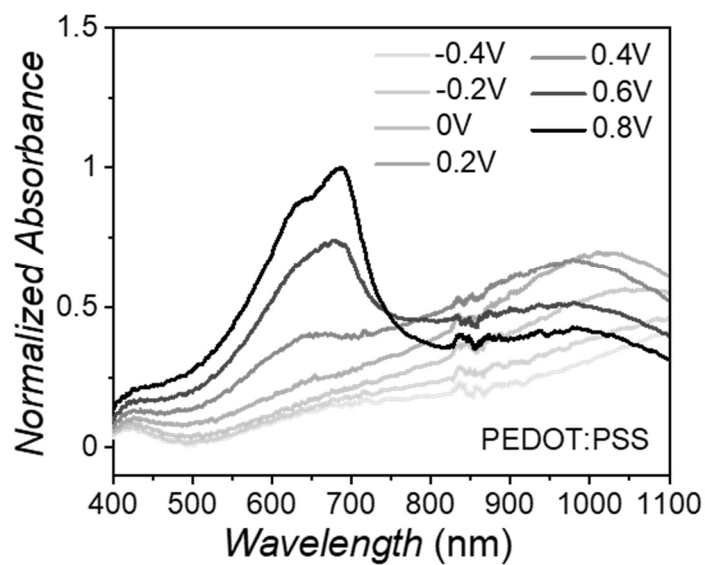
FIG. 4F**PEDOT:PSS****FIG. 4G****FIG. 4H**

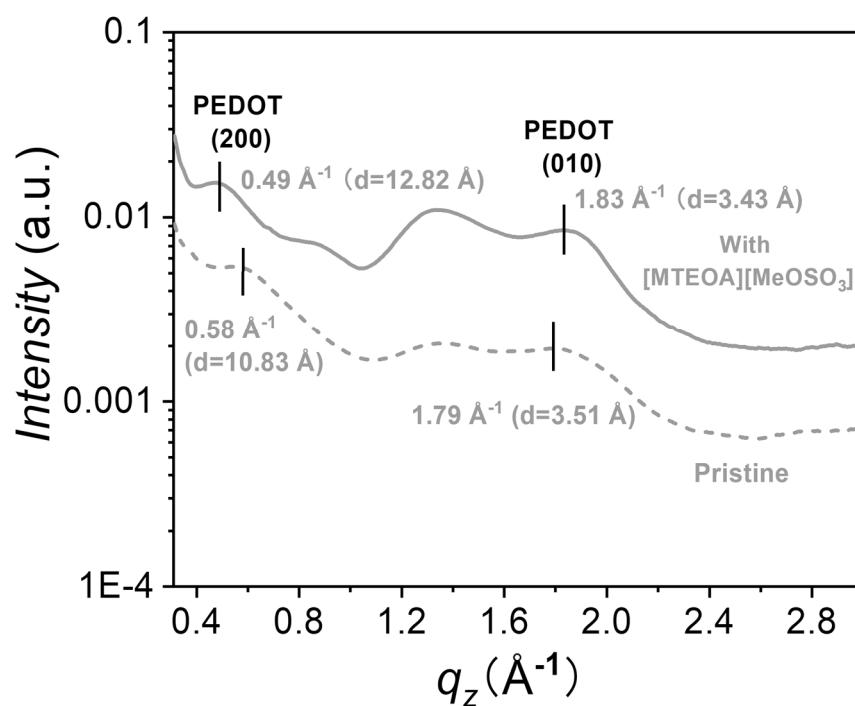
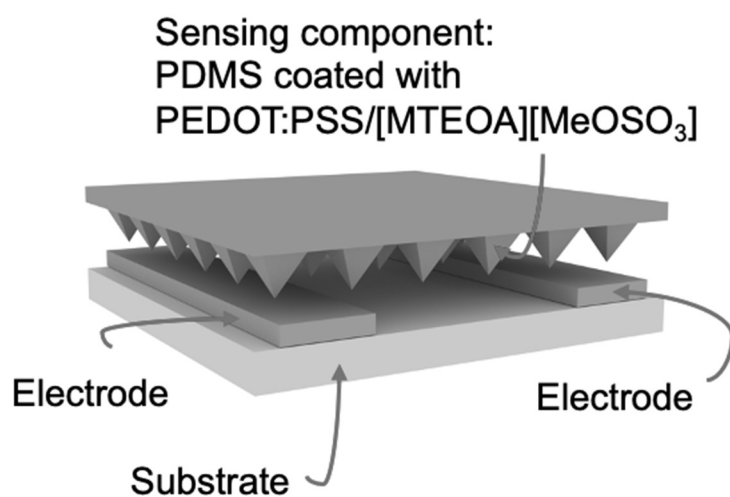
FIG. 4I**FIG. 5A**

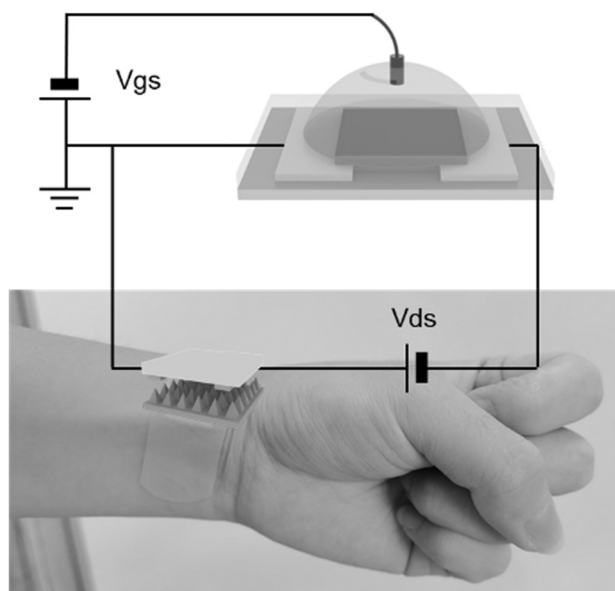
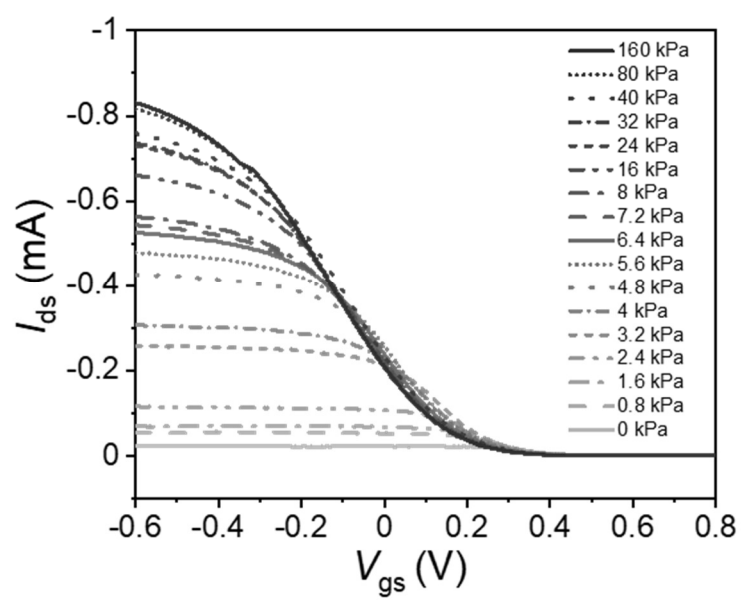
FIG. 5B**FIG. 5C**

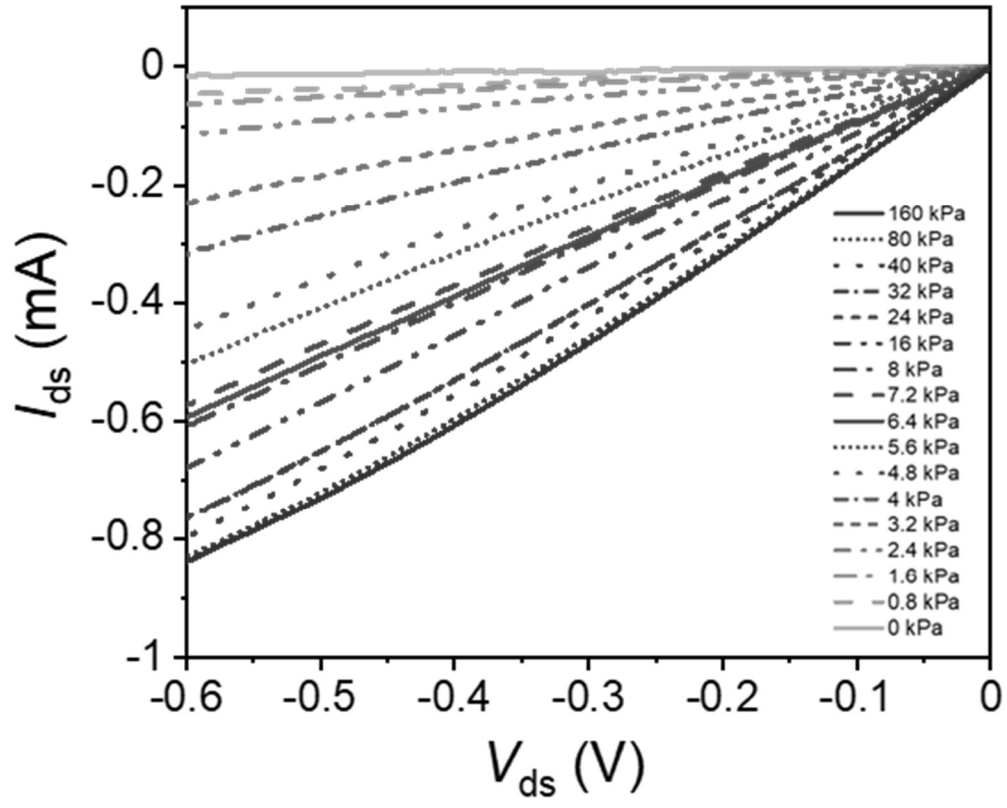
FIG. 5D

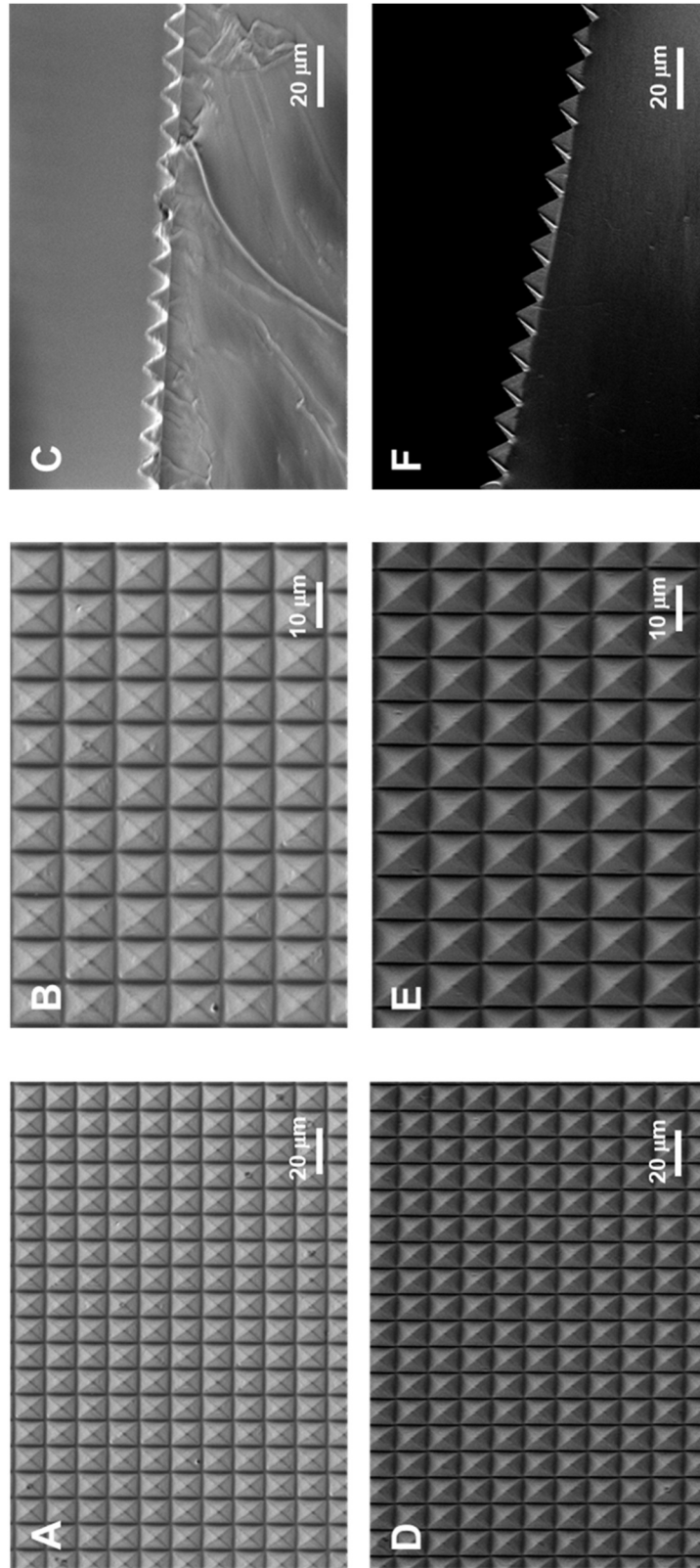
FIG. 6

FIG. 7

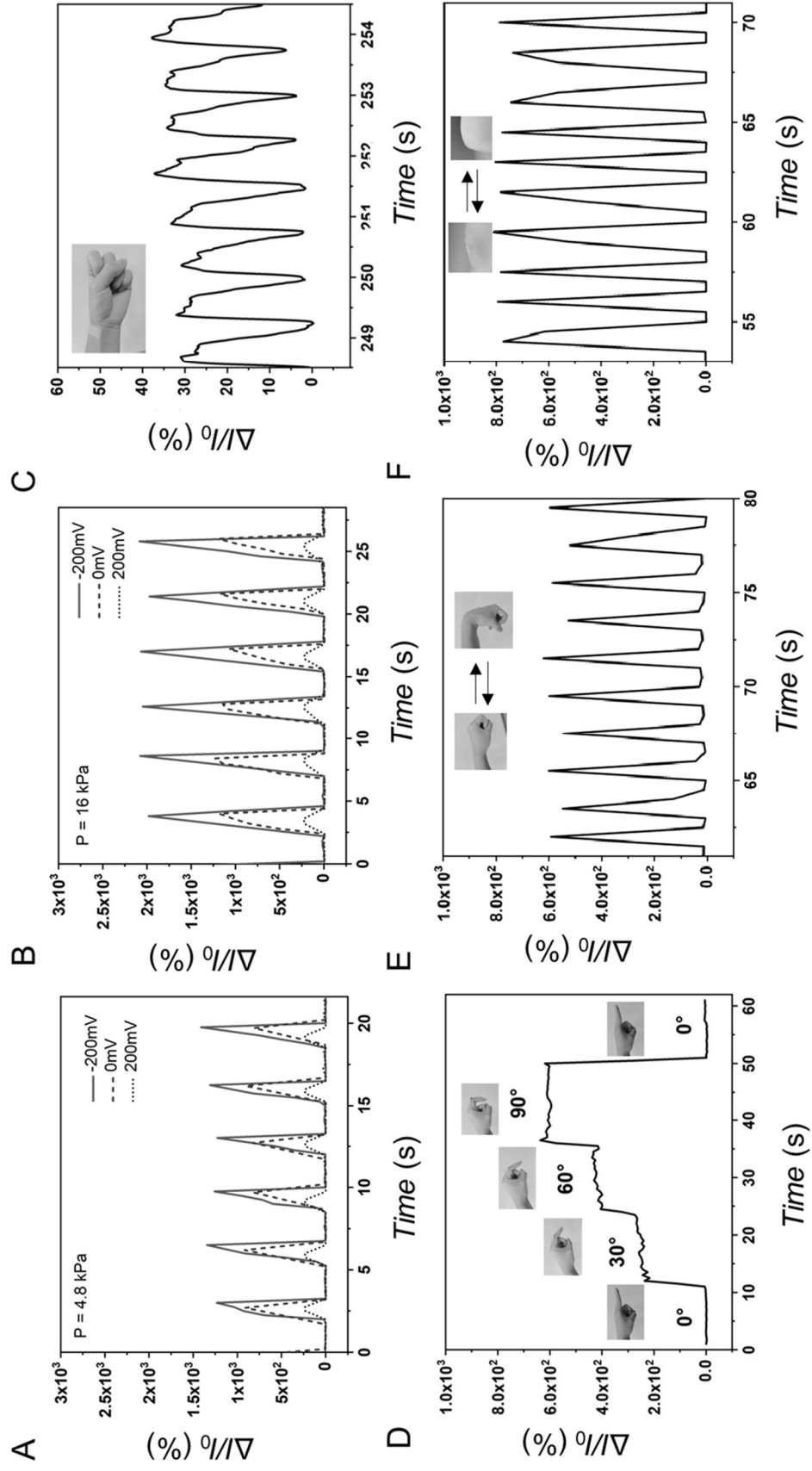


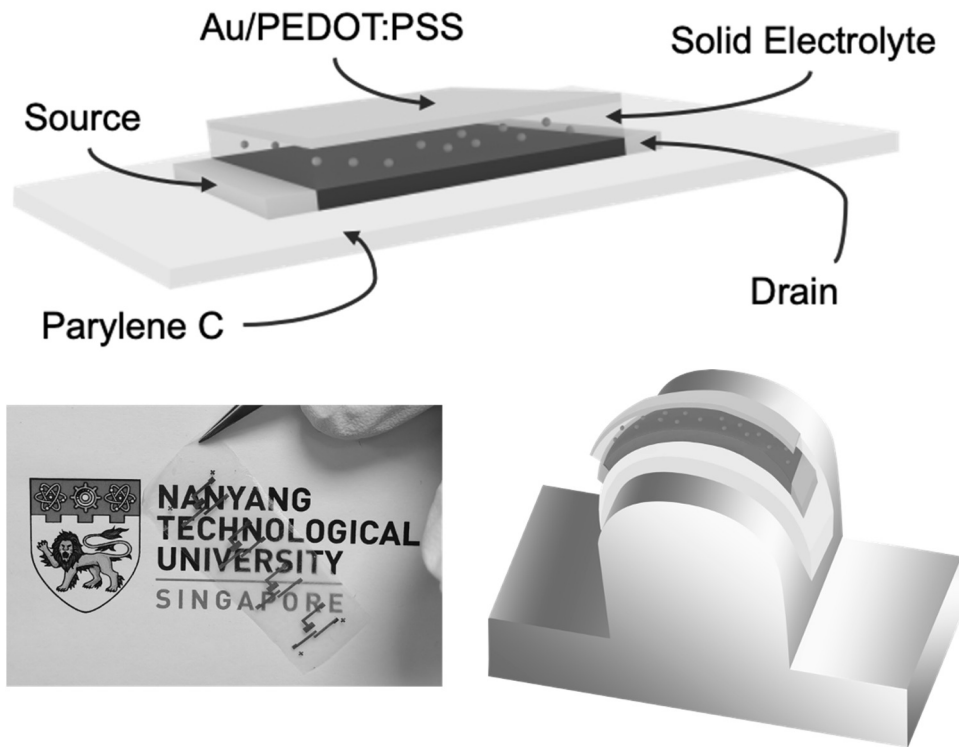
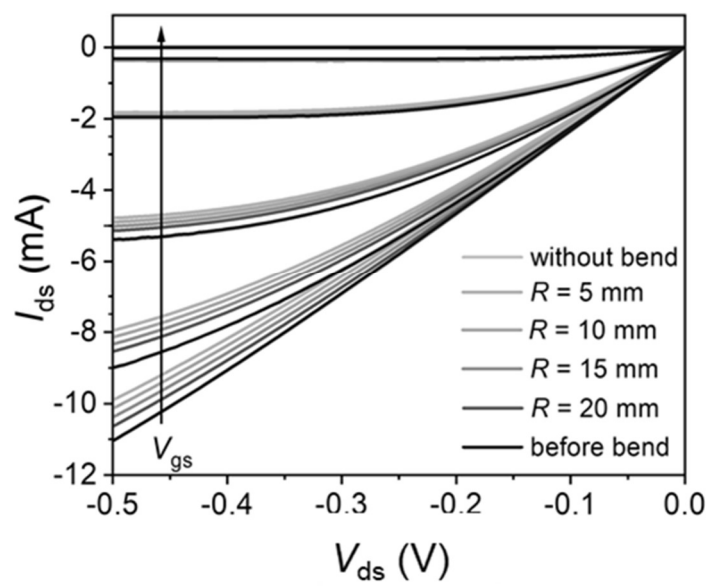
FIG. 8A**FIG. 8B**

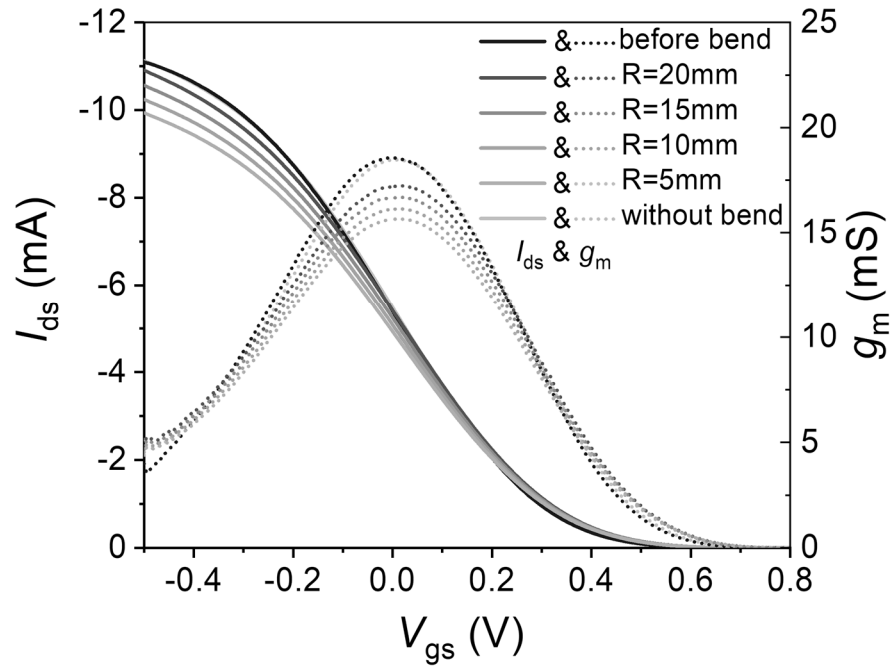
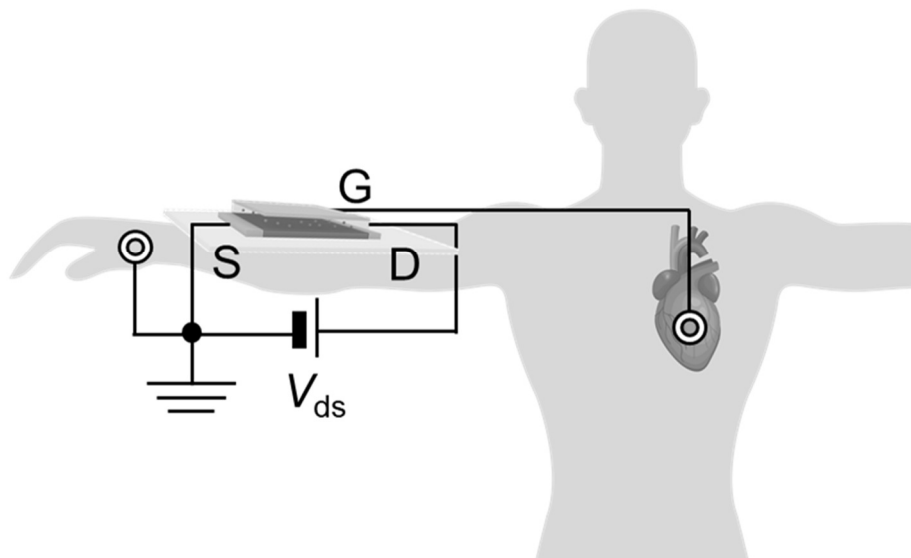
FIG. 8C**FIG. 9A**

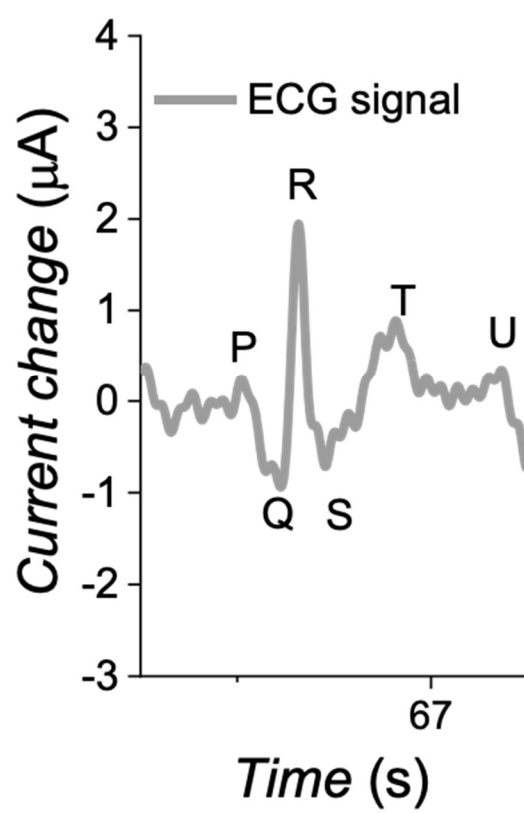
FIG. 9B

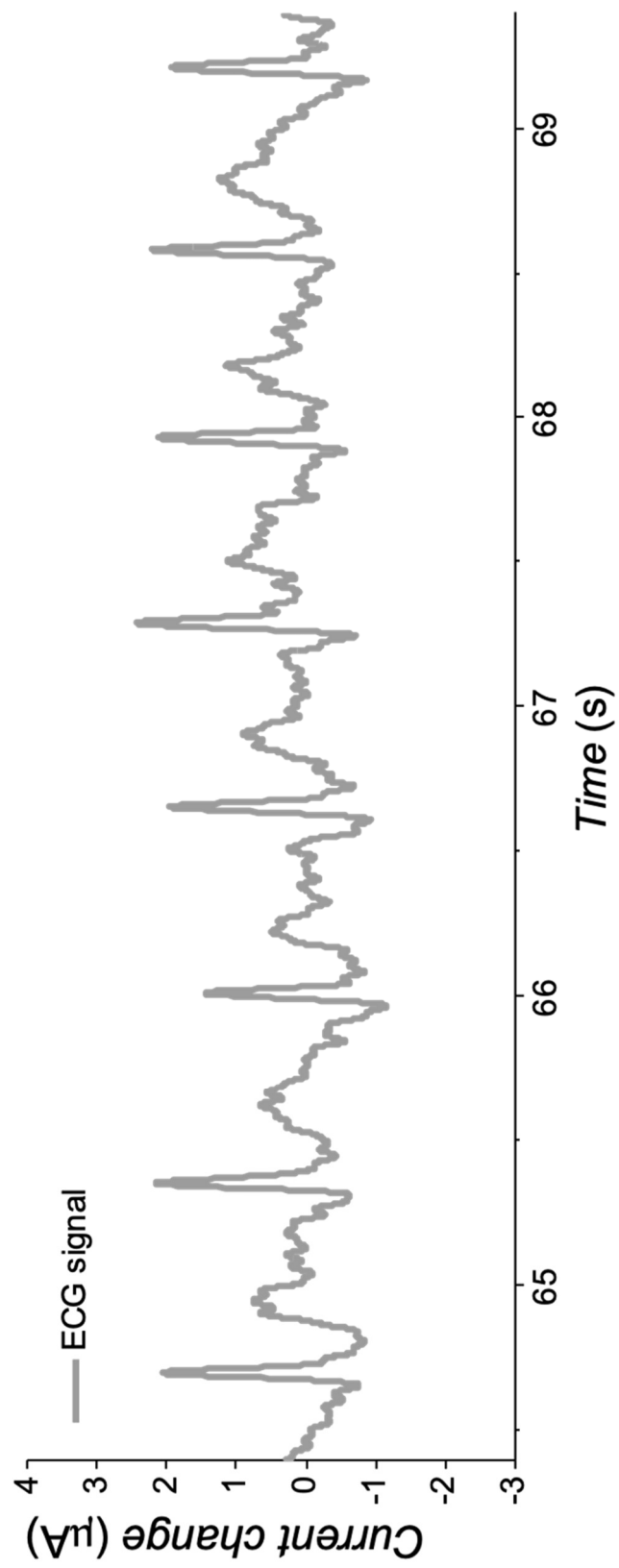
FIG. 9C

FIG. 10

