Microneedle-Assisted CuNWs-MXene Heterostructure Enables Visualized Sub-Femtomolar Detection of Cervical Cancer miRNA

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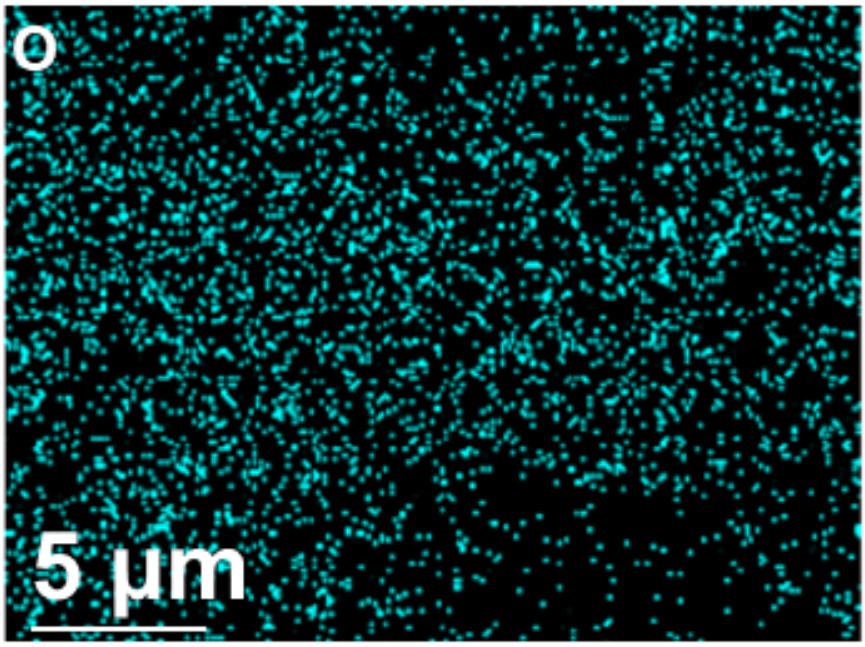
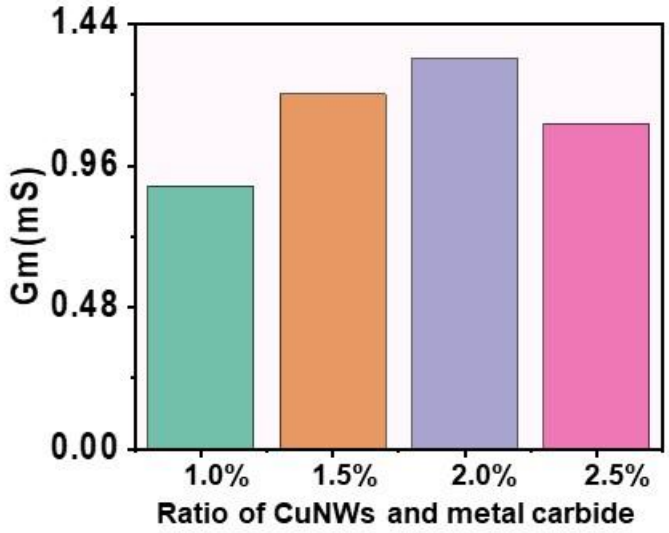
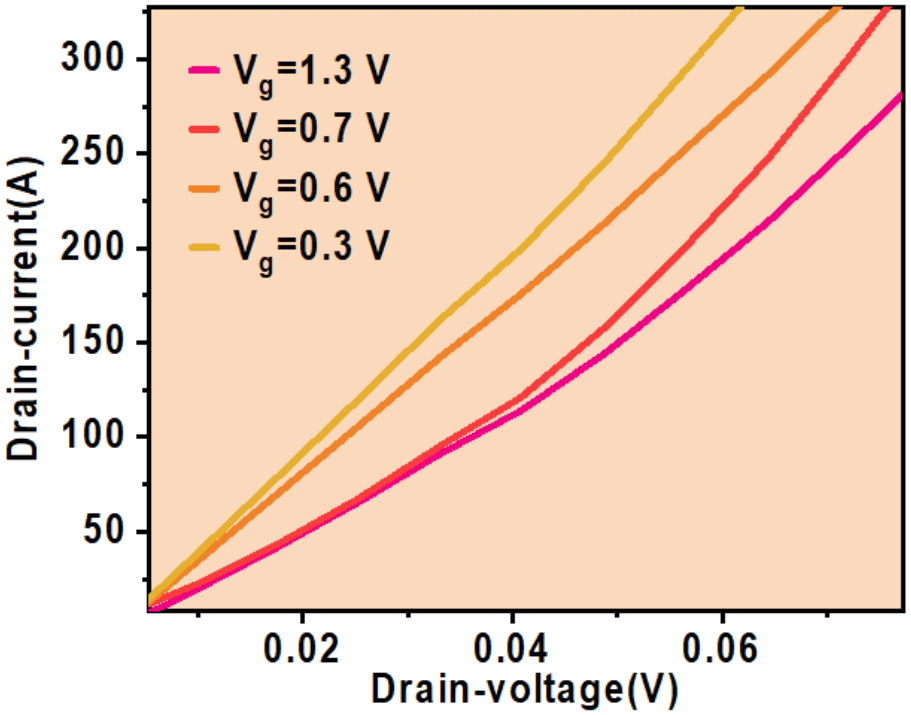


S1. Mapping analysis of O.



S2. Analysis of Transconductance with Different Doping Ratios of CuNWs and MC.



S3. Output curve for CuNWs-MC-FET.

Table S1. Comparisons of Pt-MX-iFETs with other biosensors for determination of microRNA-21 and exosomal microRNA-21.

Number	**Strategy**	**Materials**	**LOD**	**Detection range**	**References**
1	Photoacoustic Imaging	Camouflaged Nanoprobe	11.6pM	10 pM to 100 nM	[1]
3	Fluorescence	Nicked DNA Duplex Structures	680 pM	1-100 nM	[2]
5	Enhanced Raman Scattering	Au Nanoparticles	~5 fM	12 fM-18 pM	[3]
6	Fluorescence	Polymer Dnazyme Nanostructure	10 pM	10 pM-10 nM	[4]
7	Field Effect Transistor	CuNWs@MXene	0.23 fM	1 fM-1000 pM	This work

References

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