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Tunable sensitivity of a biosensor by strain modulation of a gap between gold dimers

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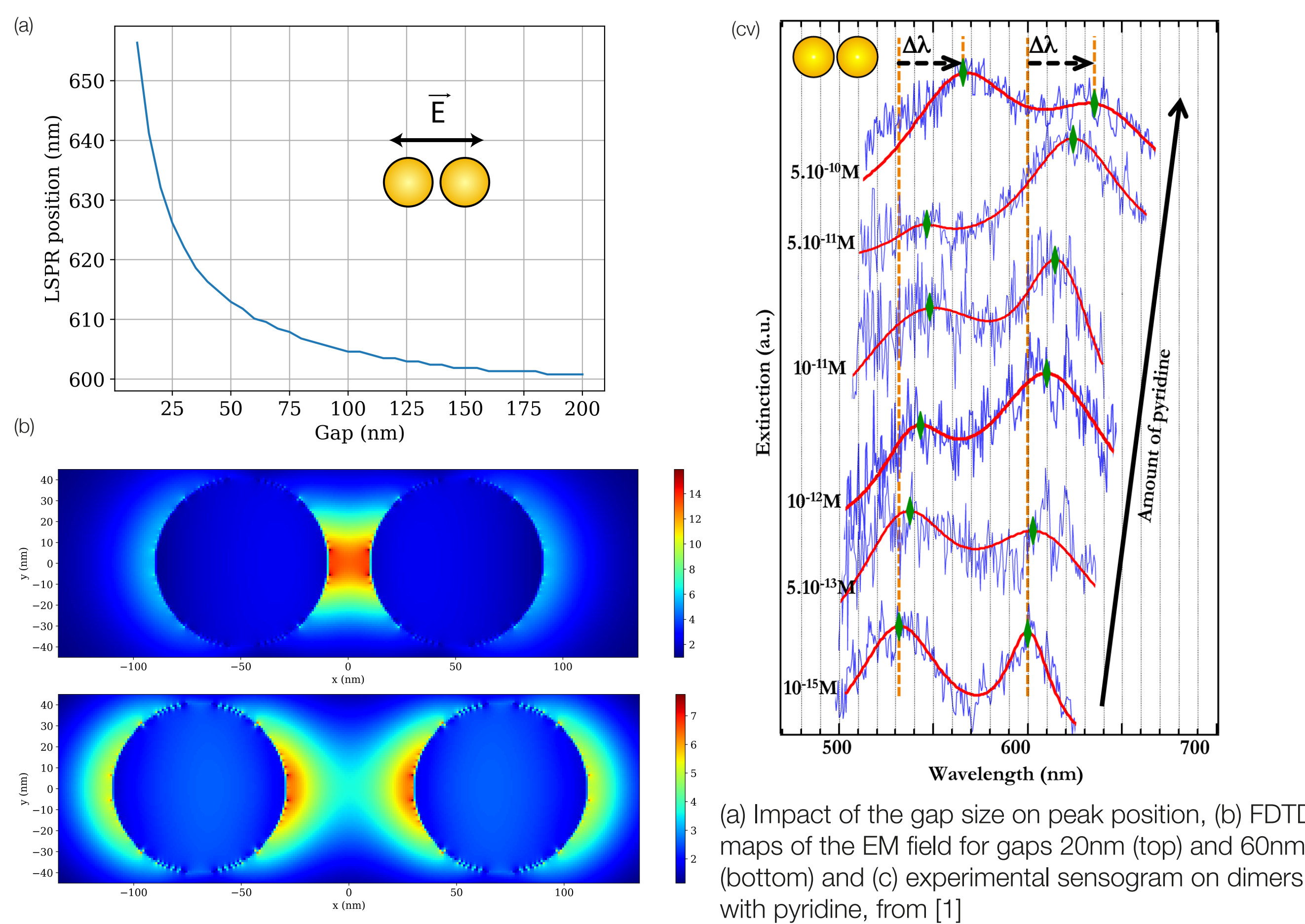
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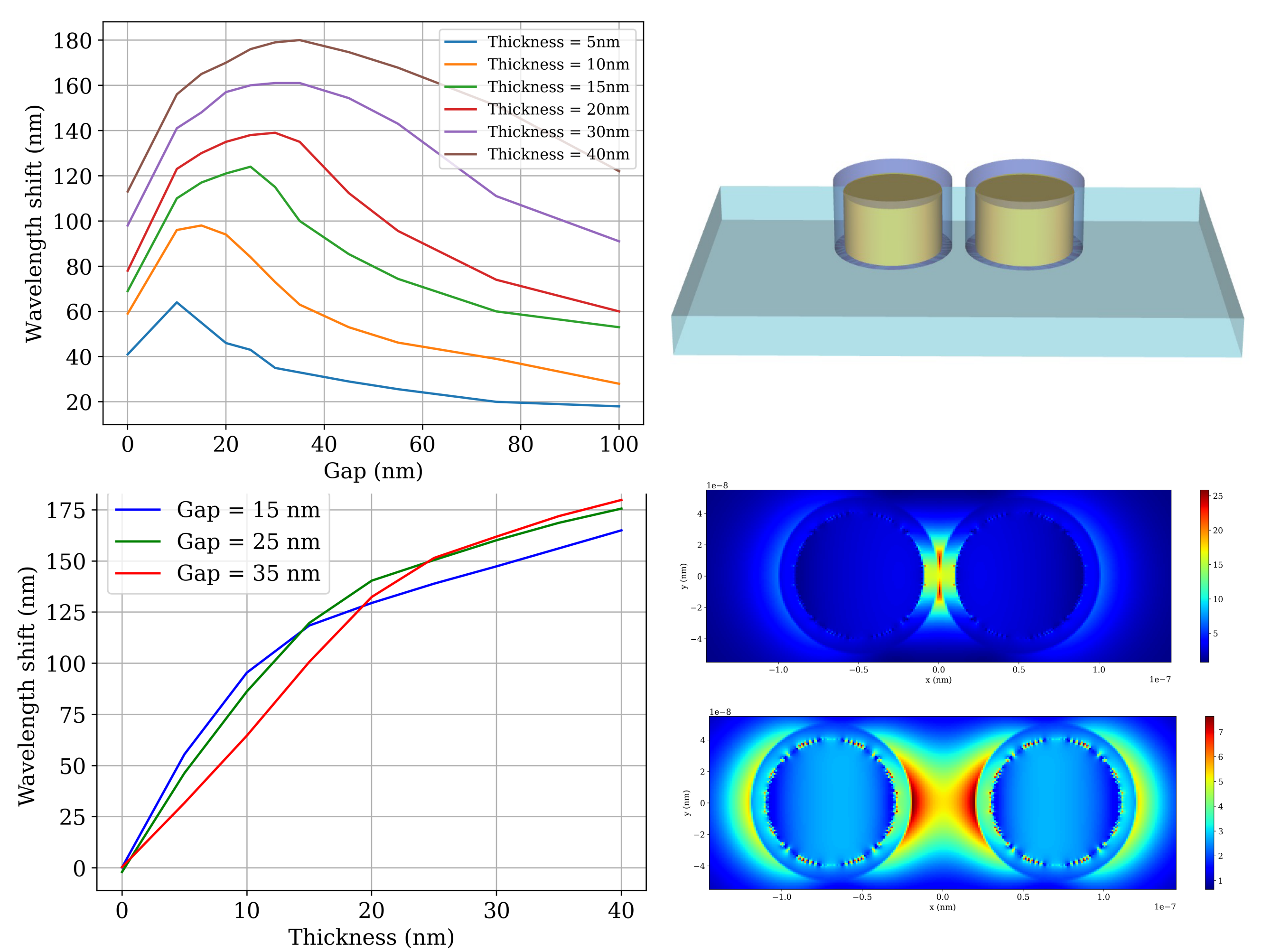
PDMS (Polydimethylsiloxane) **optical and mechanical properties** make it a perfect medium for **plasmonic-based biosensors**. The project presented here takes advantage of the **elastic properties** of PDMS, and of **gold dimers transferred onto it** to increase the detection threshold of **MUA (Mercaptoundecanoic acid)**.

Adaptative sensor: design and simulation

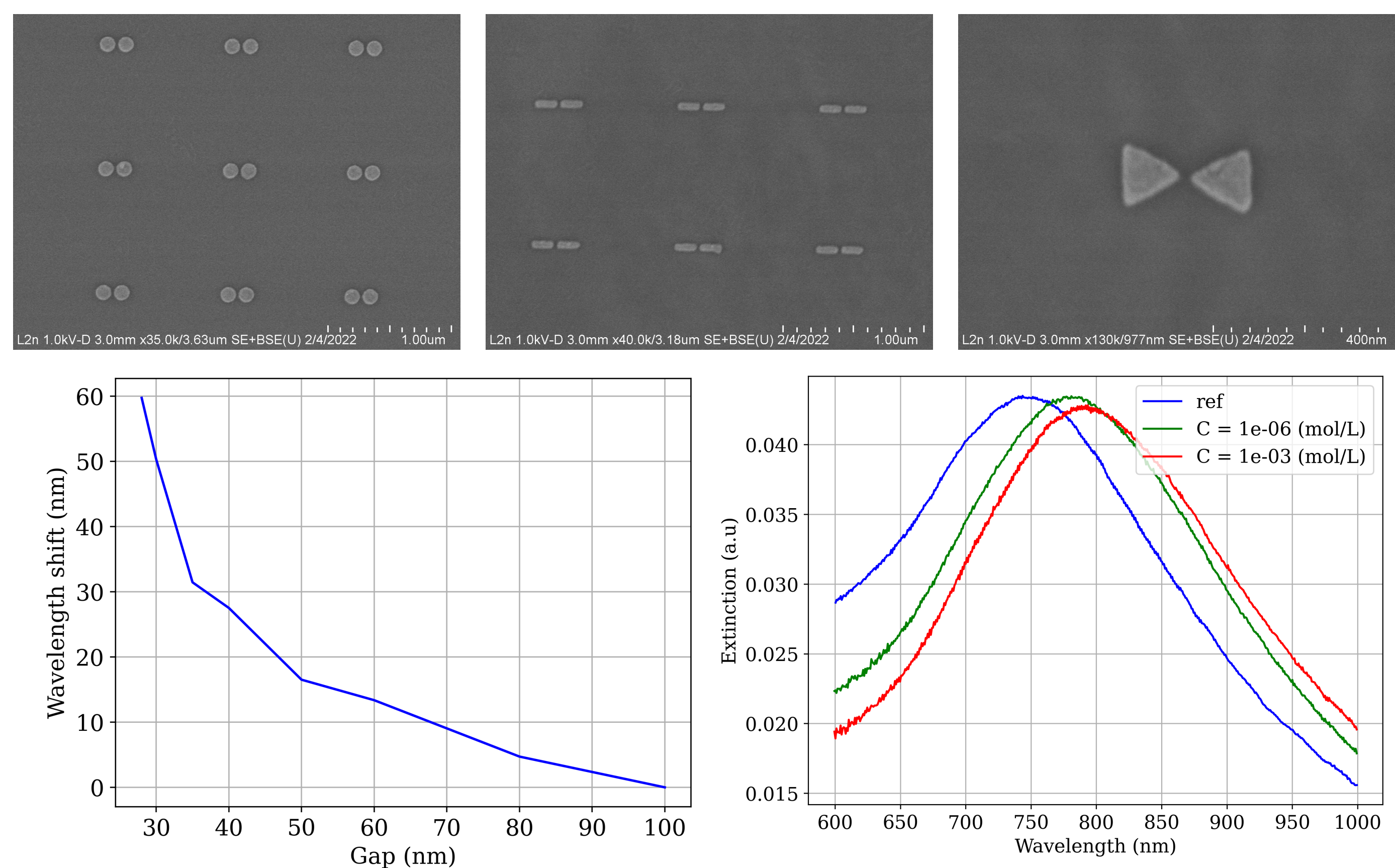


→ EM field is sensitive to the gap mode, which can be used to detect different molecule concentrations.

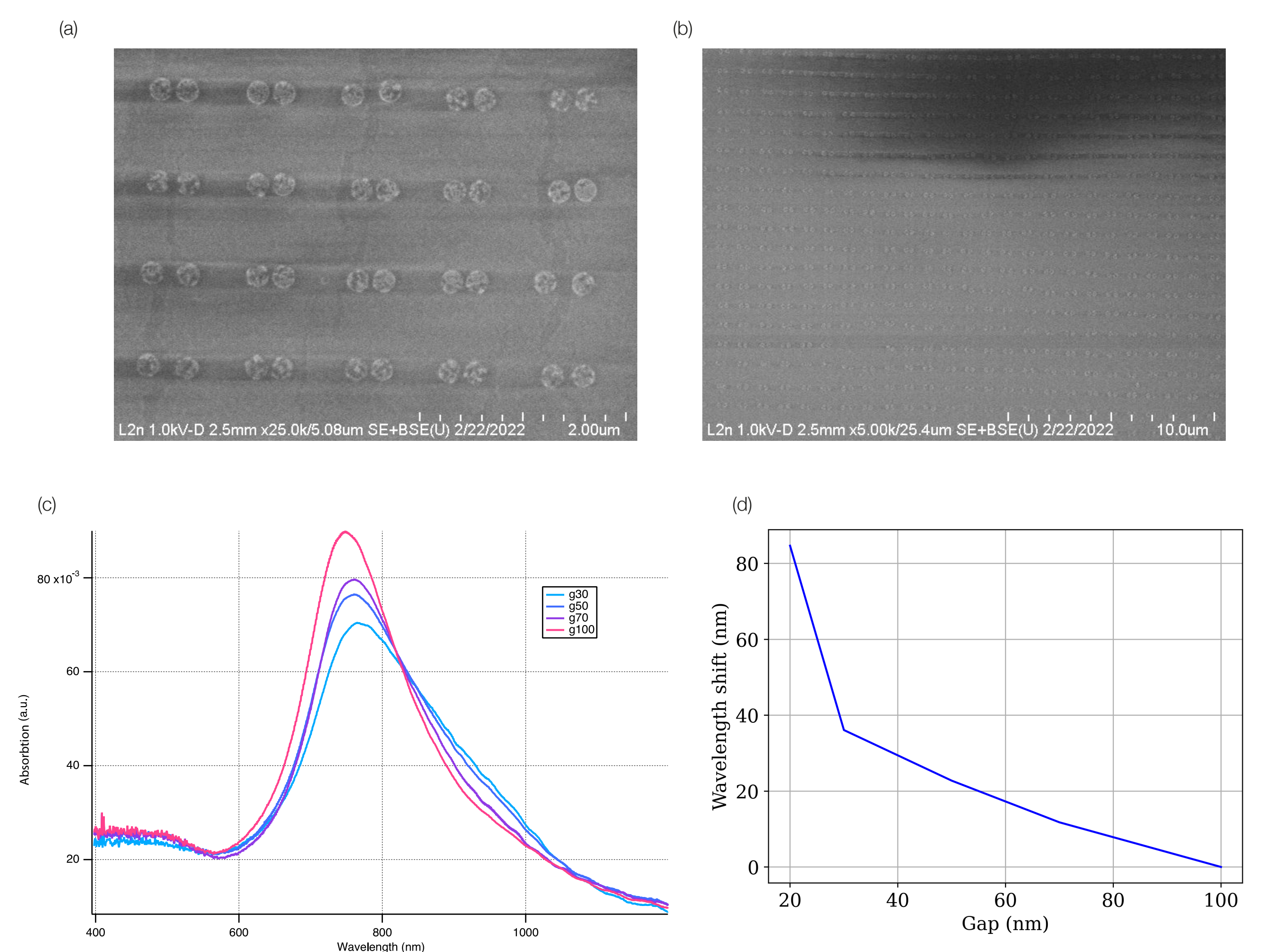
Simulated addition of MUA on gold dimers



Optical measurements on glass



Transferring structures on PDMS to make an adaptative sensor



References

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[2] Laible, F., Gollmer, D. A., Dickreuter, S., Kern, D. P. & Fleischer, M. Continuous reversible tuning of the gap size and plasmonic coupling of bow tie nanoantennas on flexible substrates. *Nanoscale* 10, 14915–14922 (2018).