# Optical detection of CA19-9 protein using yellow quantum dots with molecularly imprinted polymers

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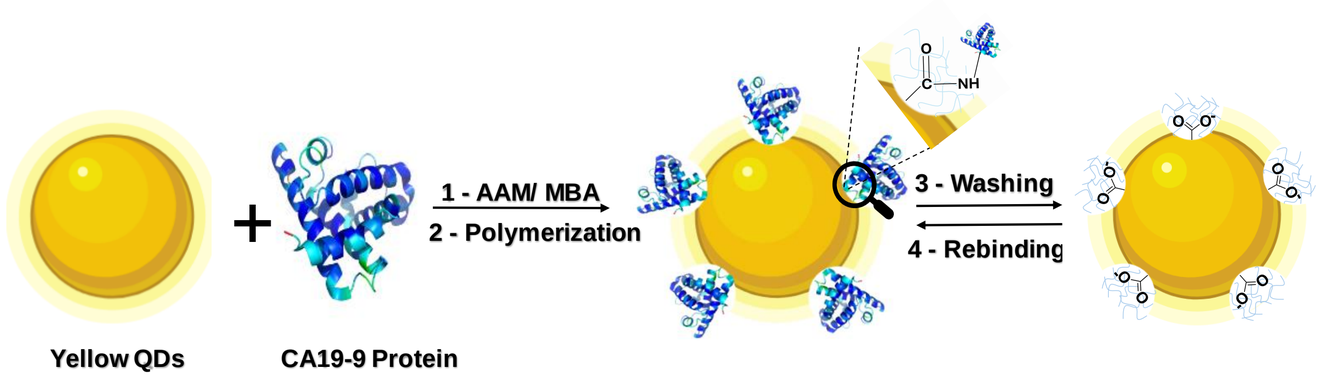
## INTRODUCTION

- Biosensors are crucial for rapid and accurate diagnoses, vital for effective treatment strategies[1].
- Traditional immunoassays have susceptibility to instability and compromise the accuracy of the results[1].
- Molecularly imprinted polymers (MIP) are emerging as biomimetic sensors that offer stability, selectivity, and resistance to environmental variations[2].
- Quantum dots (QDs) have versatile optical detection probes, raising the sensitivity of detection methods[3].
- This work aims to create a biomimetic sensor for the detection of the biomarker CA19-9, associated with pancreatic cancer.

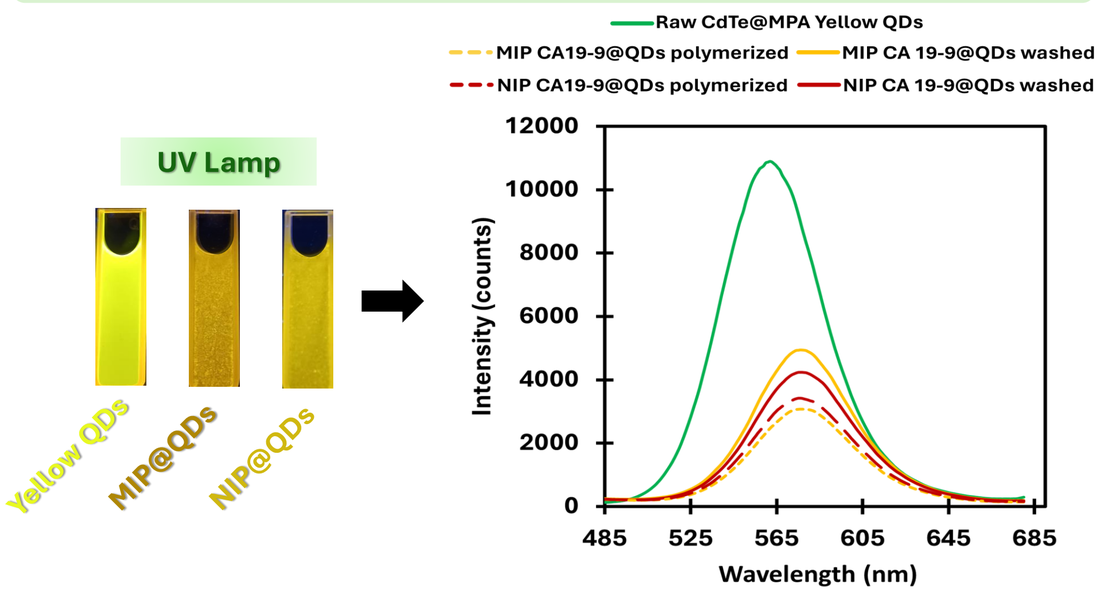
## METHODOLOGY

### Assembly of molecularly imprinted polymers

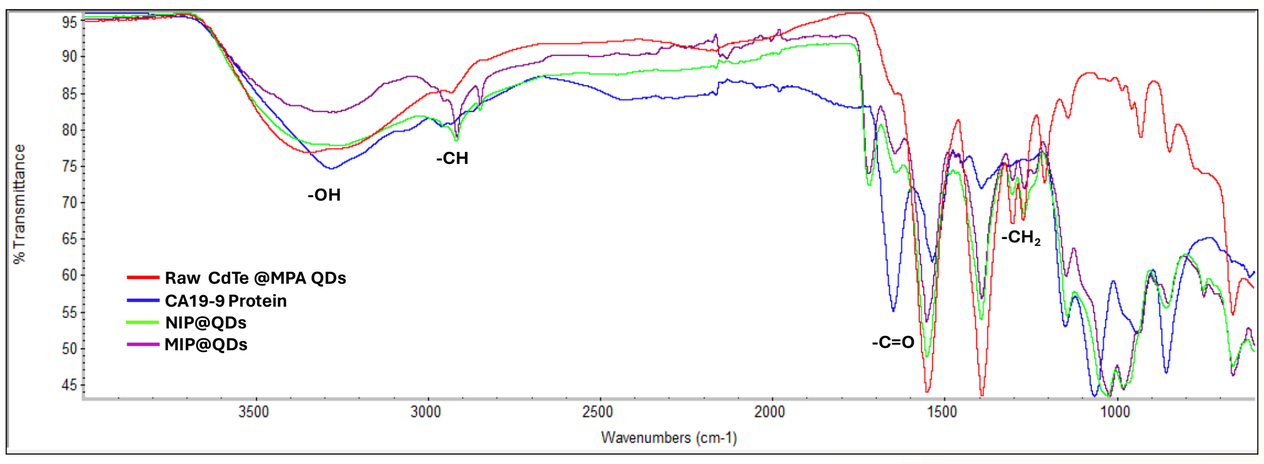



## EXPERIMENTAL RESULTS

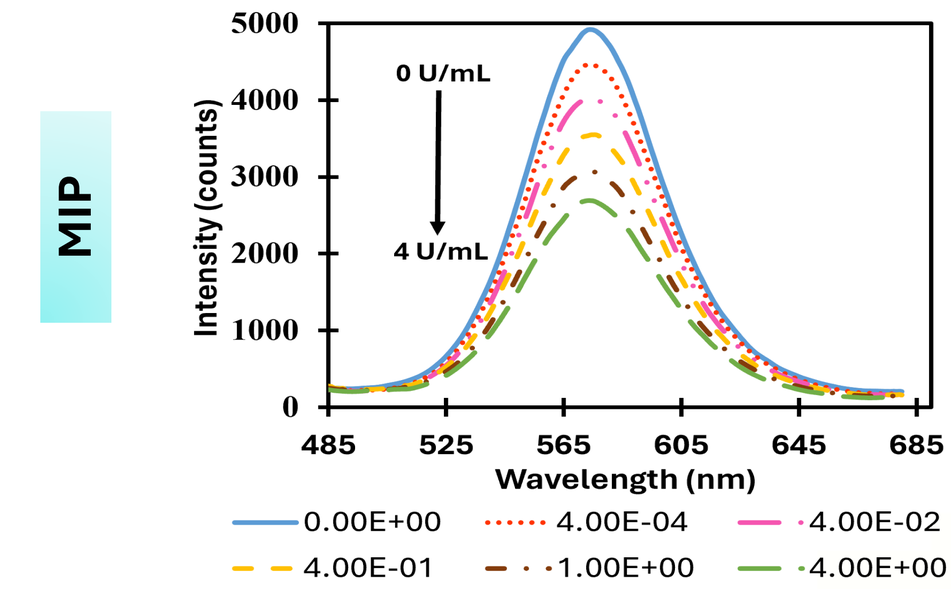
### System Characterization by Fluorimeter

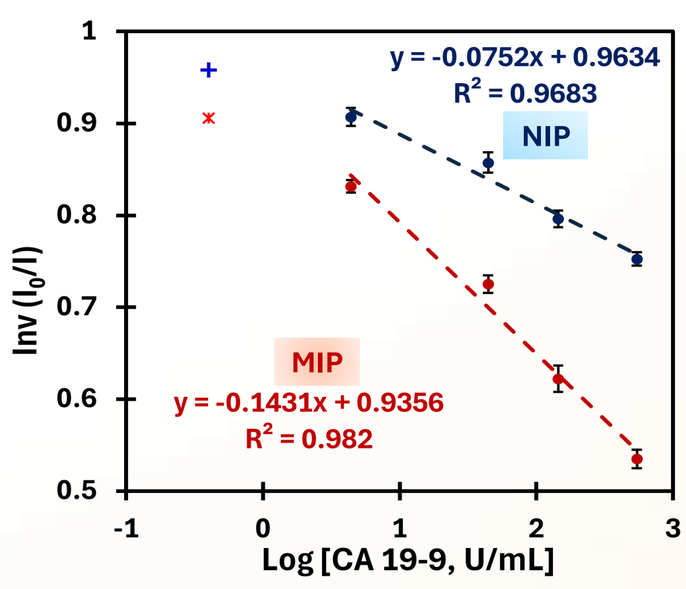



### System Characterization by FTIR




### Biosensor analytical performance




- ✓ Good response over the concentration range of 0.04 to 4 U/mL with CA19-9 standards in 100 fold diluted human serum
- ✓ Better linearity
- ✓ Higher sensitivity

## GENERAL CONSIDERATIONS

- MIP@QDs sensor systems offers a sensitive and specific approach.
- This innovative technology have the potential to revolutionize early diagnosis and monitoring of cancer and personalized healthcare.

## REFERENCES

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## ACKNOWLEDGMENTS

The authors acknowledge FCT, I.P., for the financial support to the project "Following up cancer biomarkers with new biomimetic optical systems", https://doi.org/10.54499/2022.07897.PTDC. The authors would also like to acknowledge the partial support of the Portuguese Foundation for Science and Technology (FCT), through grants UIDB/04730/2020 and UIDP/04730/2020.