

A metal-dielectric photonic crystal-based glucose sensor with sensitivity enhancement by using 2D materials

**Jakub Chylek^{1,*}, Michal Gryga¹, Dalibor Ciprian¹, Pavlina Kusnierova^{2,3,4},
David Stejskal^{2,3,4}, and Petr Hlubina¹**

¹Department of Physics, Technical University of Ostrava, 17. listopadu 2172/15, 708 00 Ostrava-Poruba, Czech Republic

²Institute of Laboratory Medicine, University of Ostrava, Syllabova 19, 703 00 Ostrava, Czech Republic

³Institute of Laboratory Medicine, University Hospital Ostrava, 17. listopadu 1790, 708 52 Ostrava, Czech Republic

⁴LAB4LIFE Ostrava FNOU, Syllabova 19, 703 00 Ostrava, Czech Republic

*jakub.chylek@vsb.cz

Supplementary information

- Supplementary Figure S1. Calculated contour plot of the reflectance as a function of the angle of incidence θ and wavelength λ for TM waves, when $n = 1.32797$.
- Supplementary Figure S2. Calculated contour plot of the reflectance as a function of the angle of incidence θ and wavelength λ for TE waves, when $n = 1.32797$.
- Supplementary Figure S3. Theoretical spectral reflectance for the TM wave and different values of the glucose RI, when the angle of incidence $\theta = 64^\circ$, $t_d = 400$ nm, $t_m = 14$ nm and $t_d' = 180$ nm.
- Supplementary Figure S4. Theoretical spectral reflectance for the TE wave and different values of the glucose RI, when the angle of incidence $\theta = 64^\circ$, $t_d = 400$ nm, $t_m = 14$ nm and $t_d' = 180$ nm.

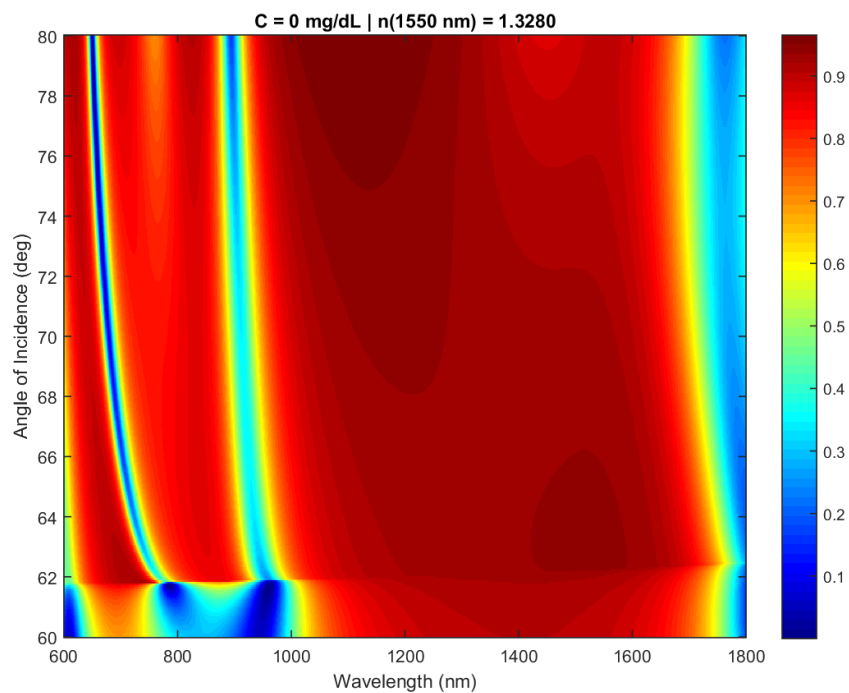


Figure S1. Calculated contour plot of the reflectance as a function of the angle of incidence θ and wavelength λ for TM waves, when $n=1.32797$.

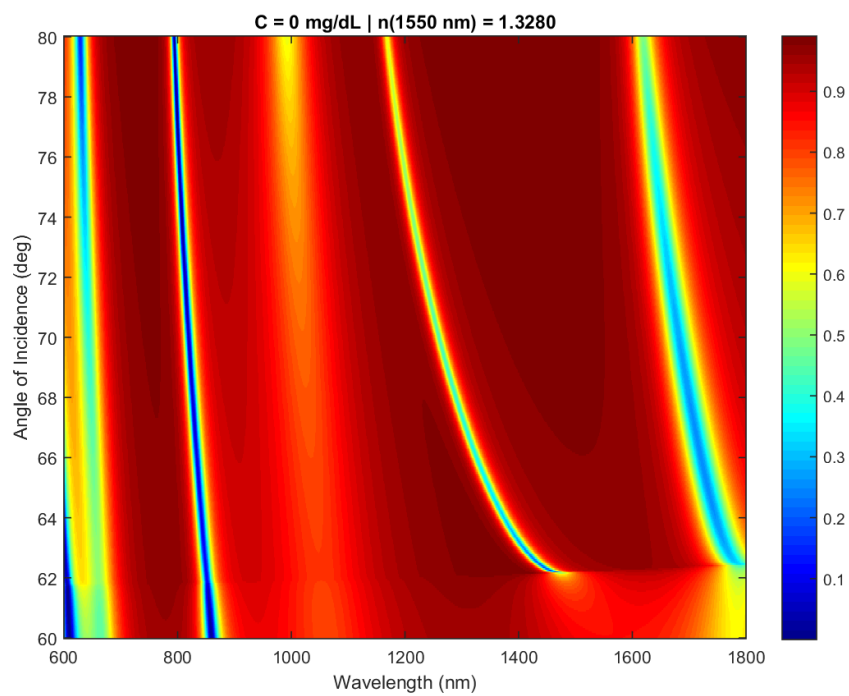


Figure S2. Calculated contour plot of the reflectance as a function of the angle of incidence θ and wavelength λ for TE waves, when $n=1.32797$.

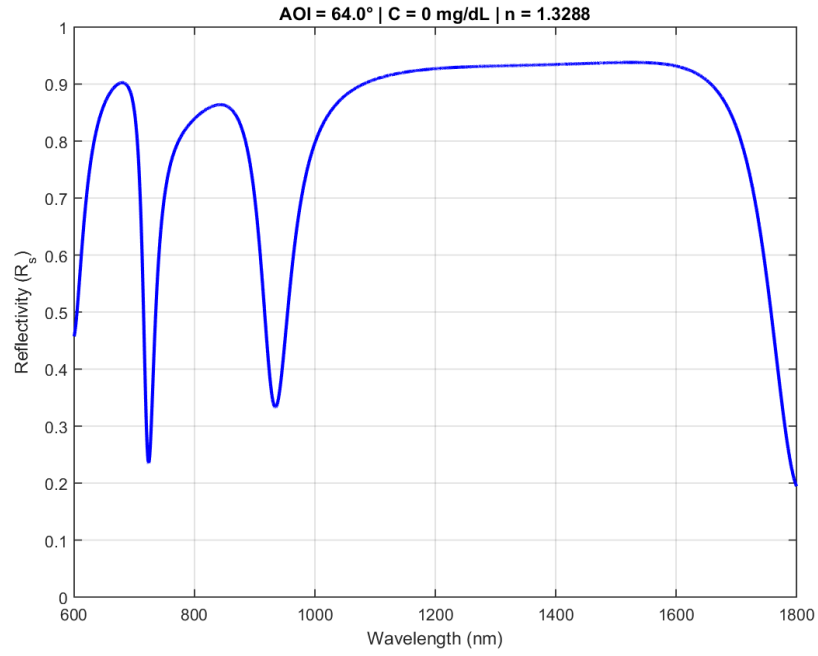


Figure S3. Theoretical spectral reflectance for the TM wave and different values of the glucose RI, when the angle of incidence $\theta = 64^\circ$, $t_d = 400$ nm, $t_m = 14$ nm and $t_d' = 180$ nm.

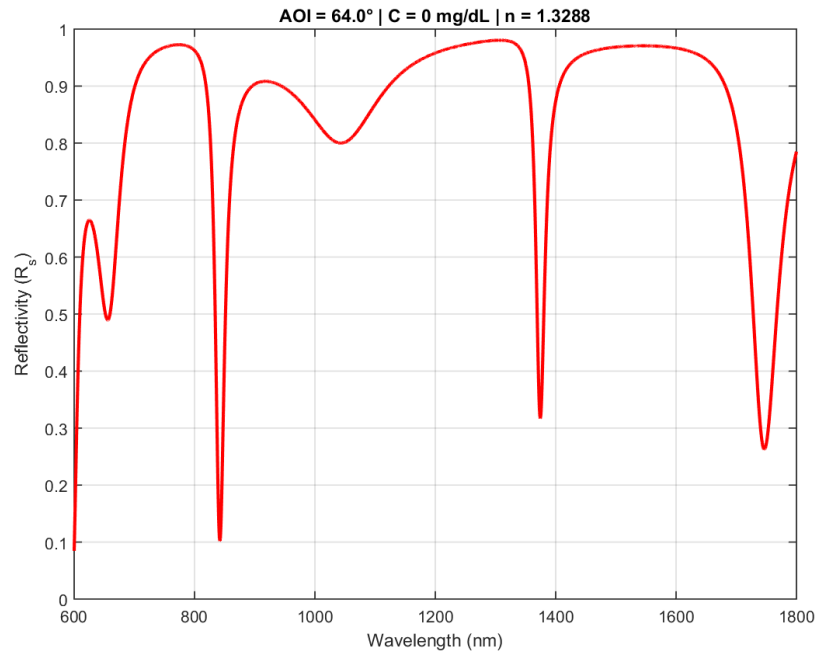


Figure S4. Theoretical spectral reflectance for the TE wave and different values of the glucose RI, when the angle of incidence $\theta = 64^\circ$, $t_d = 400$ nm, $t_m = 14$ nm and $t_d' = 180$ nm.