



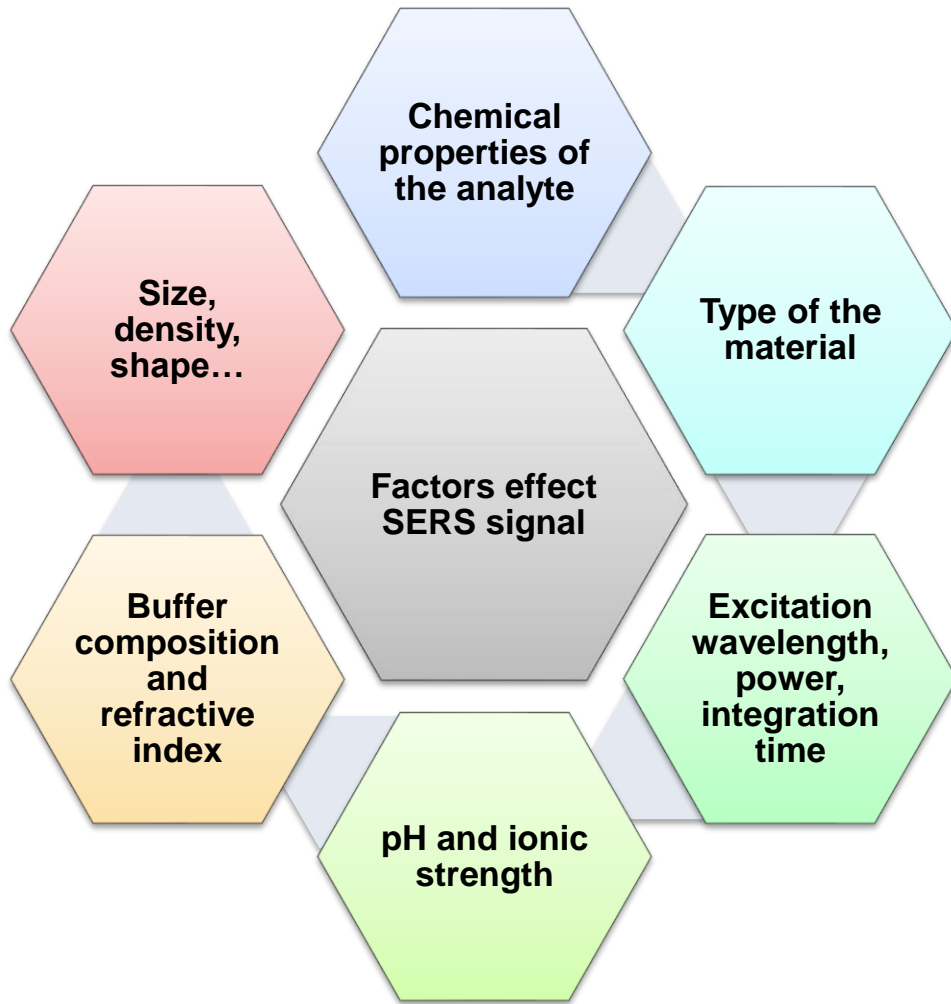
## The Effect of the Buffers' Refractive Index on the SERS Signal of Rhodamine 6G (R6G)

Shireen Zangana<sup>1,2)</sup>, Tomáš Lednický<sup>3)</sup>, Alexandra Borók<sup>1,2)</sup>, Attila Bonyár<sup>1)</sup>

- Department of Electronics Technology, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Budapest, Hungary
- Institute for Solid State Physics and Optics, Wigner Research Centre for Physics, Budapest, Hungary
- CEITEC - Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic
- B.Sc in laser and optoelectronics Engineering, Al-Nahrain University, Iraq.
- M.Sc. laser and optoelectronics Engineering, Al-Nahrain University, Iraq and UKM, Malaysia.
- Ph.D. student at Department of Electronics Technology, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Budapest, Hungary



# Motivation



# MATERIAL & METHODS

- ❖ Two types gold nanoparticle (AuNP) composites
- ❖ Rhodamine 6G  $10^{-4}$  mol/dm<sup>3</sup>
- ❖ Ethylene-glycol (25%- 100%)
- ❖ PDMS microfluidic cell

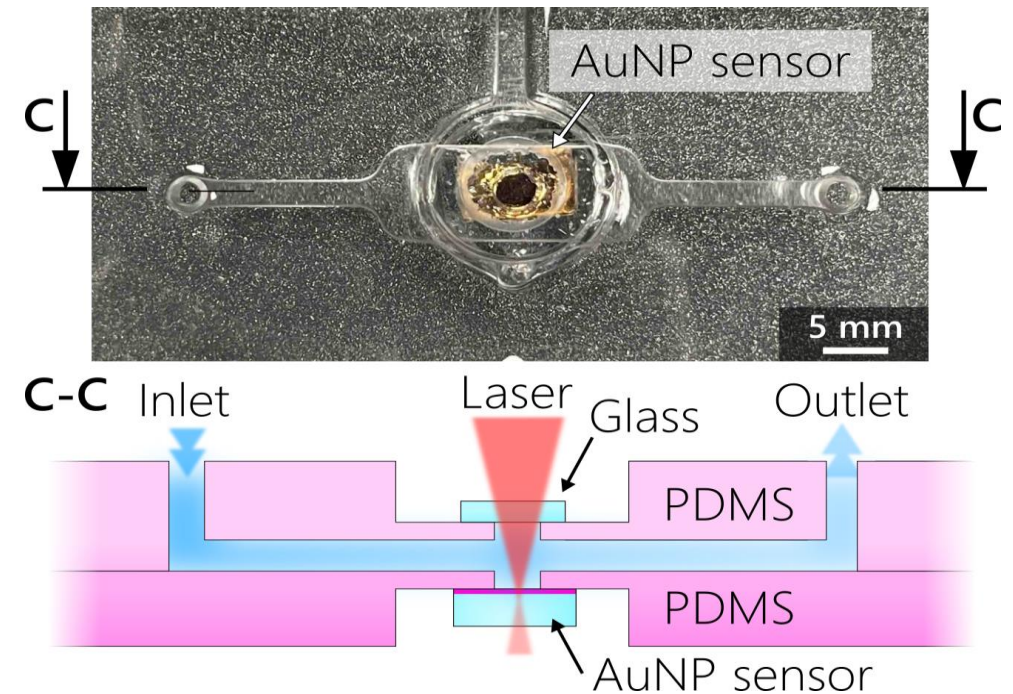


Fig. 1. (a) The structure of the microfluidic cell diagram, (b) The microfluidic cell image with Au sensor at the center.

# RESULTS

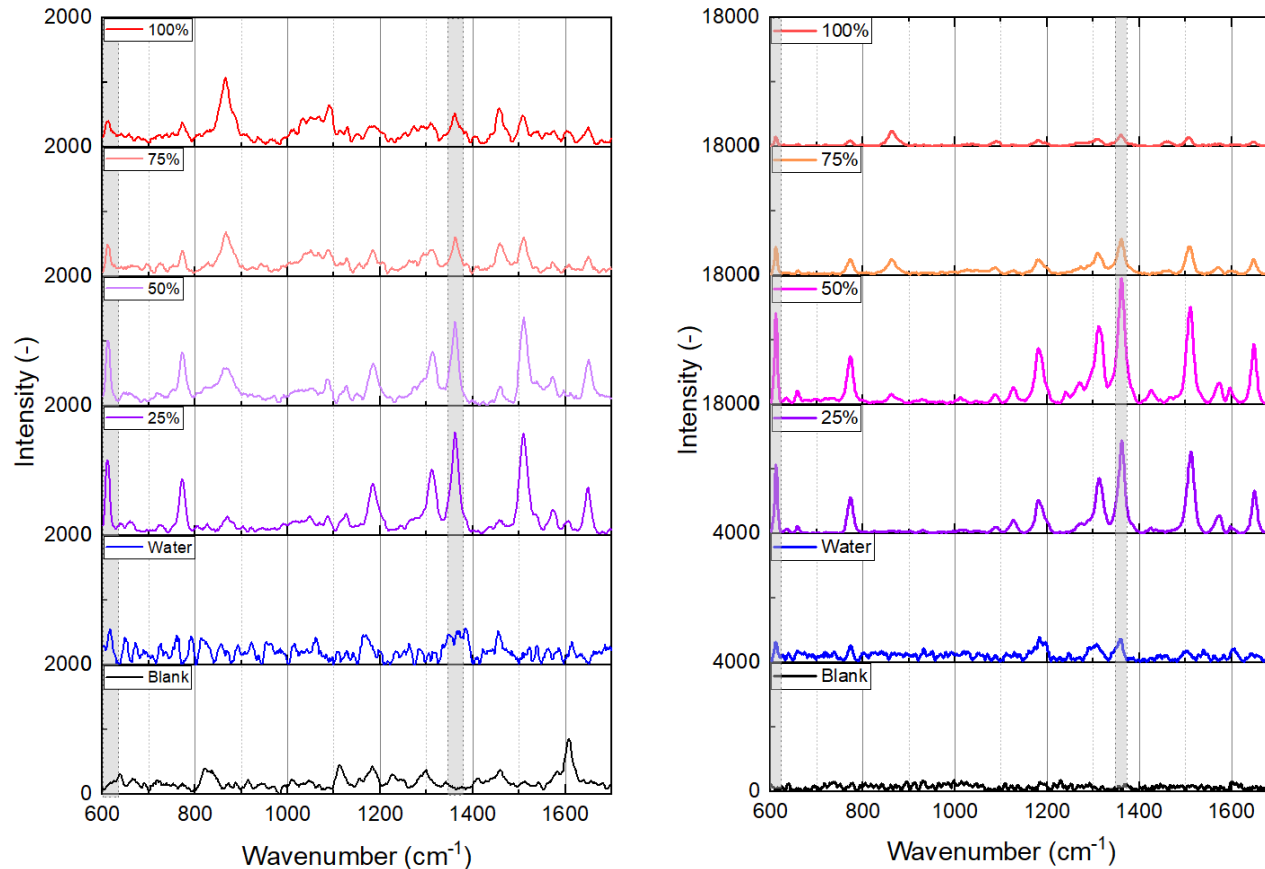


Fig.2. SERS spectra were obtained with 633nm excitation wavelength and 0.5mW for (a) type A, and (b) type B substrates. The measurement was for a blank substrate in the air; and in different EG/water ratios (25%, 50%, 75%, and 100%, with refractive indexes of 1.3552, 1.3803, 1.4055, and 1.4306, respectively) containing a fixed concentration of  $1 \times 10^{-4}$  M R6G.

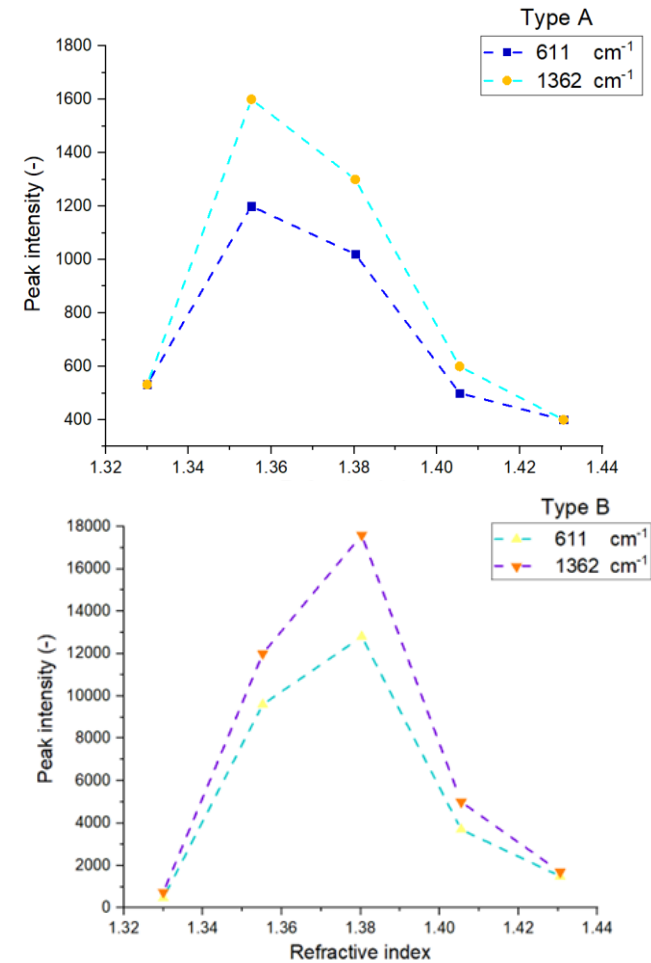


Fig.3. SERS intensities corresponding to R6G peaks molecules for type A and B substrates, measured at 633 nm excitation.

# CONCLUSION

- ❖ The refractive index of buffers significantly affects the SERS signal of Rhodamine 6G (R6G).
- ❖ Many other factors effect the SERS signal.

For more information, please visit poster No. G104