

SUPPORTING MATERIAL

A Drug Stability Study using Surface-Enhanced Raman Scattering on Silver Nanoparticles

Hulya Yilmaz^{1,2*} and Mustafa Culha^{1,2,3*}

¹Sabanci University Nanotechnology Research and Application Center (SUNUM), Tuzla, Istanbul 34956, Turkey

²Department of Genetics and Bioengineering, Faculty of Engineering, Yeditepe University, Atasehir, Istanbul 34755, Turkey

³ Department of Internal Medicine, Morsani College of Medicine, The University of South Florida, Tampa, FL, 33620, United States

*Correspondence: yilmazchulya@gmail.com, mculha2@gmail.com

RESULTS

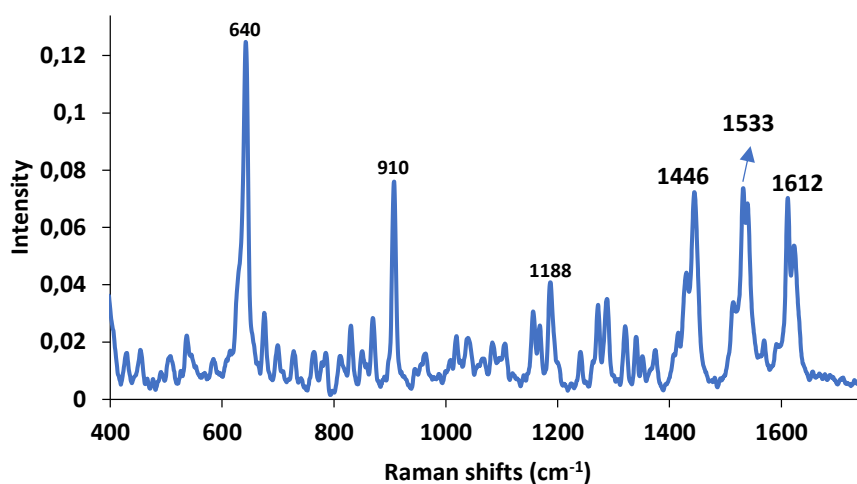


Figure S1. Raman spectrum of PMT

The assignment of each band was identified according to the previous studies [1-5].

Table S1. Tentative SERS band assignments

Raman shifts (cm ⁻¹)	Tentative assignments
542-570	COC, OCC, OCO skeletal bending
610-623	OH, out of plane bending (free)
640	HCH bending
678	CCC in phenyl ring
750-780	Pyrimidine ring breathing
819-829	CO stretching vibrations (major citrate bands)
894-910	HCC, HCO bendings
921	Benzene-ring breathing
933-940	NCO
953	C=O stretching
1011-1026	Hydrogen bonds pyrimidine+water
1042-1055	CH in plane bending
1081	CN stretching
1092-1102	COC stretching symmetric
1188-1194	NH ₂ stretching
1218	CH ₂ wagging
1233	OH bending
1252-1274	NH ₂ rocking
1290-1301	CN stretching in benzotriazole + NH
1320-1323	HCH (wagging), HCC, HOC, COH (rocking) bending
1356	CH ₂ scissoring vibrations
1396	COO ⁻
1417	CH ₂ scissoring

1435-1450	CH ₂ symmetric deformation ⁵
1530-1541	N-H deformation ⁵
1588	C-N stretching
1608-1615	Phenyl ⁵

REFERENCES

- 1) Yilmaz, H.; Cobandede, Z.; Yilmaz, D.; Cinkilic, A.; Culha, M.; Demiralay, E. C. Monitoring forced degradation of drugs using silica coated AgNPs with surface-enhanced Raman scattering. *Talanta* 214 (2020) 120828.
- 2) Alula, M.T.; Mengesha, Z.T.; Mwenesongole E. Advances in surface-enhanced Raman spectroscopy for analysis of pharmaceuticals: A review, *Vibrational Spectroscopy* 98 (2018) 50-63.
- 3) Oztas, D. Y.; Altunbek, M.; Uzunoğlu, D.; Yilmaz, H.; Çetin, D.; Suludere, Z.; Çulha, M. Tracing size and surface chemistry dependent endosomal uptake of gold nanoparticles using surface-enhanced Raman scattering. *Talanta* 214 (2020) 120828.
- 4) El-Zahry, M.R.; Lendl, B. Structure elucidation and degradation kinetic study of Ofloxacin using surface enhanced Raman spectroscopy, *Spectrochim. Acta Part A Mol. Biomol. Spectrosc.* 2018, 193, 63–70.
- 5) Elżbieta U. Stolarczyk, Krzysztof Stolarczyk, Marta Łaszcz, Marek Kubiszewski, Andrzej Leś, Olga Michalak, Pemetrexed conjugated with gold nanoparticles – Synthesis, characterization and a study of noncovalent interactions, *European Journal of Pharmaceutical Sciences*, 109 (2017) 13-20.