

Supporting Information

A Label-free Platform for Identification of Exosomes from Different Sources

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Raman Peak Assignment¹

Table S1. Assignments of the Raman peaks of exosomes isolated from human serum.

Raman shift (cm ⁻¹)	Peak assignment	References
864.1	Ribose vibration, one of the distinct RNA modes	2
1063.9	Skeletal C-C stretch of lipids	3
1170.4	C-H in-plane bending mode of tyrosine	3
1255.6	Lipids	4
1302.9	Amide III (protein)	2
1316.1	Guanine (B,Z-marker)	5
1345.7	CH ₃ , CH ₂ wagging	6
1373.3	T, A, G (ring breathing modes of the DNA/RNA bases)	2
1386.2	CH ₃ band	3
1427.2	Deoxyribose (B,Z-marker)	5
1457.0	Deoxyribose	5
1479.6	Amide II	4
1515.8	Cytosine	5
1589.0	Phenylalanine, hydroxyproline	7
1655.2	Amide I of proteins	8

Table S2. Assignments of the Raman peaks of exosomes isolated from the conditioned medium of the lung cancer cell HCC827.

Raman shift (cm ⁻¹)	Peak assignment	References
854.4	Ring breathing tyrosine (proteins)	9
1034.3	Proline (collagen assignment)	6
1113.6	The strong C-O band of ribose (serves as marker band for RNA in solutions)	4
1207.0	Tryptophan & phenylalanine ν (C-C ₆ H ₆) mode, Stretching of C-N	3
1238.4	Amide III	10
1253.5	Amide III (protein band), second amide, Amide III (unordered), structural protein modes of tumors, amide III vibration mode of structural protein, triglycerides (fatty acids)	3, 4, 11
1369.6	CH ₃ /CH ₂ twisting or bending mode of lipid/collagen	2

1474.8	Amide II (largely due to coupling of CN stretching & in-plane bending of N-H group,	4
1506.6	N=H bending, Cytosine	12
1584.8	Hydroxyproline	7

Table S3. Assignments of the Raman peaks of exosomes isolated from the conditioned medium of the lung cancer cell H1975.

Raman shift (cm ⁻¹)	Peak assignment	References
847.4	Monosaccharides (α -glucose, (C-O-C) skeletal mode	13
1120.3	The strong C-O band of ribose (serves as a marker band for RNA in solutions)	4
1213.5	Tryptophan & phenylalanine ν (C-C ₆ H ₆) mode, Stretching of C-N	3, 9
1260.0	Amide III (protein band), second amide, Amide III vibration mode of structural proteins, CH ₂ in-plane deformation (lipids), Triglycerides (fatty acids)	3, 4
1309.3	CH ₃ /CH ₂ twisting or bending mode of lipid/collagen	7
1422.0	A, G (ring-breathing modes of DNA/RNA bases)	2
1481.0	Amide II (largely due to coupling of CN stretching & in-plane bending of N-H group)	4
1590.9	C=C olefinic stretch (protein assignment), Phenylalanine, hydroxyproline	7
1605.9	Cytosine (NH ₂), Ring C-C stretch of phenyl (1), Phenylalanine, tyrosine, C=C (protein)	5

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