Table S-I

Band[#]	cm^{-1}	Vibrational origin	Ref.[##]
1	604	C=O bending in RNA cytosine & guanine	48
2	622	Ring deformation in RNA adenine C−S stretching in cysteine (*gauche*)	45,48
3	640	C−C−S stretching in methionine (CH_2 side; *gauche*)	45
4	653	C−S stretching in methionine (CH_2 side; *gauche*)	45
4*	662	−C(H_2)−S− stretching in methionine with H atom at the *trans* position C−S stretching on CH_2 side in methionine sulfoxide	46,47
5	669	C−S stretching in methionine (CH_2 side; *trans*)	45
6	687	Pyrrole ring deformation in RNA adenine & guanine C−S stretching in cysteine (*trans*)	45,48
7	696	C−S stretching in methionine (CH_3 side; *gauche*)	45
8	713	C−S−C stretching in methionine (CH_3 side; *trans*)	45
8*	725	−S−CH_3 stretching in methionine sulfoxide C−S stretching on CH_3 side in methionine sulfoxide	46,47
9	738	Benzene ring breathing in RNA adenine	48
10	752	Ring deformation in RNA cytosine Breathing of indolyl ring in tryptophan	45,48
10*	764	−C(H_2)−S− stretching in methionine (with C atoms at the *trans* position) CH_2 rocking in methylene groups	46,47
11	769	$C_\beta H_2$ rocking in methionine	45
12	798	Ring breathing in RNA cytosine $C_\alpha H_2$ rocking in methionine	45,48

[#]Numbers and colors are the same as those of the sub-bands shown in Fig. 4 of the main paper.

[##]Reference numbers are the same as those listed in the main paper.