

Supplementary Information

Table 1- Raman shifts (cm^{-1}) and peak assignments for AZPY (solid), HGN + AZPY + KCl (SERS - HGN) and Zhuang's silver foil + AZPY (SERS - Ag)

Raman	SERS – HGN	SERS-Ag	Assignments
661	686	-	$\delta(\text{C-C-C})\text{py}$, $\delta(\text{C-N-C})\text{py}$, $\delta(\text{C-N=N})$
928	930	-	$v(\text{C-C})\text{py}$, $\delta(\text{C-N-C})\text{py}$, $\delta(\text{C-N=N})$
990	1015	1010	Ring Breathing
1167	1162	1163	Ring Breathing, $v(\text{C-Nazo})$, $\delta(\text{C-H})\text{py}$
1232	-	1235	$\delta(\text{C-H})\text{py}$, $v(\text{C-Nazo})$, $v(\text{C-C})\text{py}$
1333	1325	1326	$v(\text{C-C})\text{py}$, $\delta(\text{C-H})\text{py}$
1413	1415	1415	$\delta(\text{C-H})\text{py}$, $v(\text{C-C})\text{py}$, $v(\text{N=N})$
1465	1463	1466	$v(\text{C-C})\text{py}$, $v(\text{C-N})\text{py}$, $\delta(\text{C-H})\text{py}$
1493	1491	1497	$v(\text{C-C})\text{py}$, $v(\text{N=N})$
1587	1597	1597	$v(\text{C-N})\text{py}$, $v(\text{C-H})\text{py}$, $v(\text{N=N})$

v = stretch, δ = bend, py = pyridyl ring

Table 2- Raman shifts (cm^{-1}) and peak assignments for BPE (solid), HGN + BPE + KCl (SERS - HGN) and Zhuang's silver foil + BPE (SERS - Ag)

Raman	SERS – HGN	SERS-Ag	Assignments
661	686	-	$\delta(\text{C-C-C})\text{py}$, $\delta(\text{C-N-C})\text{py}$, $\delta(\text{C-N=N})$
928	930	-	$v(\text{C-C})\text{py}$, $\delta(\text{C-N-C})\text{py}$, $\delta(\text{C-N=N})$
990	1015	1010	Ring Breathing
1167	1162	1163	Ring Breathing, $v(\text{C-Nazo})$, $\delta(\text{C-H})\text{py}$
1232	-	1235	$\delta(\text{C-H})\text{py}$, $v(\text{C-Nazo})$, $v(\text{C-C})\text{py}$
1333	1325	1326	$v(\text{C-C})\text{py}$, $\delta(\text{C-H})\text{py}$
1413	1415	1415	$\delta(\text{C-H})\text{py}$, $v(\text{C-C})\text{py}$, $v(\text{N=N})$
1465	1463	1466	$v(\text{C-C})\text{py}$, $v(\text{C-N})\text{py}$, $\delta(\text{C-H})\text{py}$
1493	1491	1497	$v(\text{C-C})\text{py}$, $v(\text{N=N})$
1587	1597	1597	$v(\text{C-N})\text{py}$, $v(\text{C-H})\text{py}$, $v(\text{N=N})$

v = stretch, δ = bend, py = pyridyl ring

Table 3- Raman shifts (cm^{-1}) and peak assignments for MPY (solid), HGN + MPY + KCl (SERS - HGN) and Hu's silver foil + MPY (SERS - Ag)

Raman	SERS - HGN	SERS - Ag	Assignments
645	-	-	$\delta(\text{C-C-C})\text{py}$
721	715	707	$v(\text{C-S})$, Ring Breathing
990	1006	1010	Ring Breathing
1044	-	-	$\delta(\text{C-H})\text{py}$
1080	1096	1061	$\delta(\text{C-H})\text{py}$
1106	1113	1098	$v(\text{C-S})$, Ring Breathing
1205	-	1220	$\delta(\text{C-H})\text{py}$, $\delta(\text{N-H})\text{py}$
1249	-	-	$\delta(\text{C-H})\text{py}$
1394	-	-	$v(\text{C-C})\text{py}$
1478	-	-	$v(\text{C=C})\text{py}$, $v(\text{C=N})\text{py}$
1595	1587	1580	$v(\text{C-C})\text{py}$
1612	-	-	$v(\text{C-C})\text{py}$

v = stretch, δ = bend, py = pyridyl ring

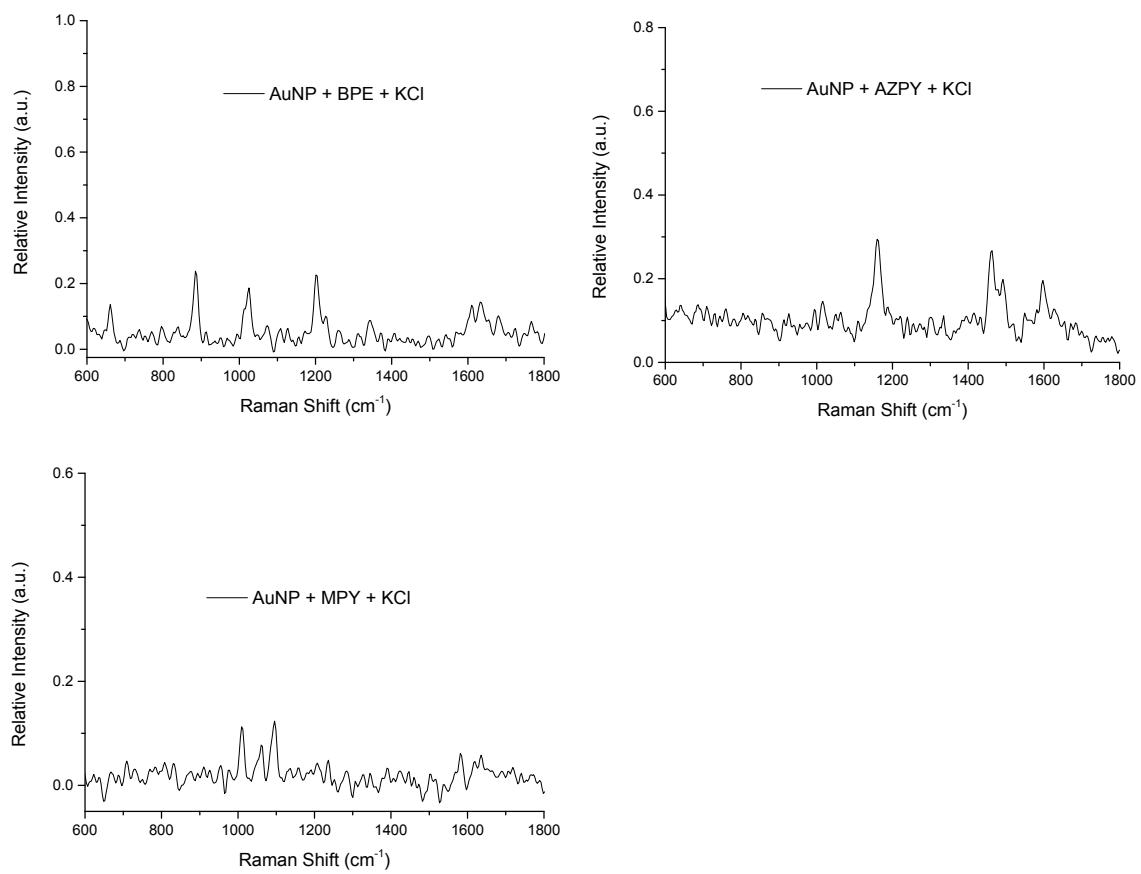


Figure S1 - SERS spectra for BPE, AZPY and MPY analysed with spherical gold nanoparticles (AuNP; size ~40 nm) + KCl. A laser excitation of 1064 nm and an exposure time of 20 seconds were employed. All spectra have been background corrected.