Electronic Supplementary Material (ESI) for RSC Advances.

Table S1 - C 1s peak deconvolution and assignments for the methylene blue solution and the particles obtained after He plasma and Ar plasma treatment respectively

	C-C/C=C	C-N/C=N/C-S	contamination	N-C=O
Methylene blue	284.68	285.68	287.46	-
FWHM	1.59	1.6	3.1	-
%	47.3	41.5	11.2	-
He plasma treatment	284.4	285.7	-	288.1
FWHM	3.2	2.25	-	2.63
%	61.5	29.4	-	9.1
Ar plasma treatment	284.7	285.8	-	288.4
FWHM	1.62	2.17	-	2.46
%	47.9	43.6	-	8.5

Table S2 - N 1s peak deconvolution and assignments for the methylene blue solution and the particles obtained after He plasma and Ar plasma treatment respectively

	C-N=C	N-C	N=O	contamination	pyridine-N-oxide	$-NO_2$
Methylene blue	398.9	399.7	-	401.5	-	-
FWHM	1.44	1.47	-	3.05	-	-
%	31	56.8	-	12.2	-	-
He plasma treatment	-	399.7	-	-	402.3	406.7
FWHM	-	3.49	-	-	3.66	2.11
%	-	68.7	-	-	27.5	3.8
Ar plasma treatment	-	399.3	400.8	-	-	-
FWHM	-	2	2.11	-	-	-
%	-	62.9	37.1	-	-	-

Table S3 - O 1s peak deconvolution and assignments for the methylene blue solution and the particles obtained after He plasma and Ar plasma treatment respectively

	contamination	Sulfur oxides	N-C=O
Methylene blue	532.2	-	-
FWHM	3.05	-	-
%	100	-	-
He plasma treatment	-	530.9	532.8
FWHM	-	3.05	2.81
%	-	41.2	58.8
Ar plasma treatment	-	531.9	532.7
FWHM	-	2.17	2.65
%	-	48.4	51.6

Table S4 - S 2p peak deconvolution and assignments for the methylene blue solution and the particles obtained after He plasma and Ar plasma treatment respectively

	C-S-C		**$-SO_3$**		**$-SO_4$**	
Methylene blue	164.2	165.4	167.7	168.9	-	-
FWHM	1.58	1.68	1.45	1.55	-	-
%	57.4	28.7	9.31	4.65	-	-
He plasma treatment	163.9	165.1	-	-	168.6	169.8
FWHM	3.09	3.49	-	-	3.45	2.69
%	35.5	17.8	-	-	31.1	15.6
Ar plasma treatment	164	165.2	167.5	168.7	-	-
FWHM	1.85	1.91	2.25	1.76	-	-
%	46.1	23	20.6	10.3	-	-

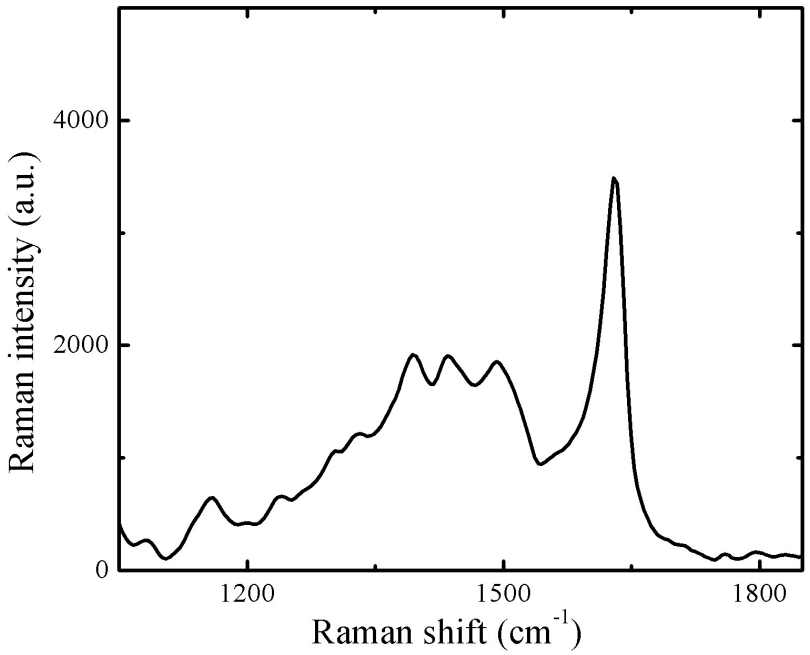

Figure S1- Raman spectrum of methylene blue on Si/SiO_2 with 532 nm excitation laser