

# **Graphite Coated Paper as Substrate for High Sensitive Analysis in Ambient Surface-Assisted Laser Desorption/Ionization Mass Spectrometry**

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[Supporting information](#)

**Table S1** Fifty one detected compounds which were examined under visible laser (532 nm).

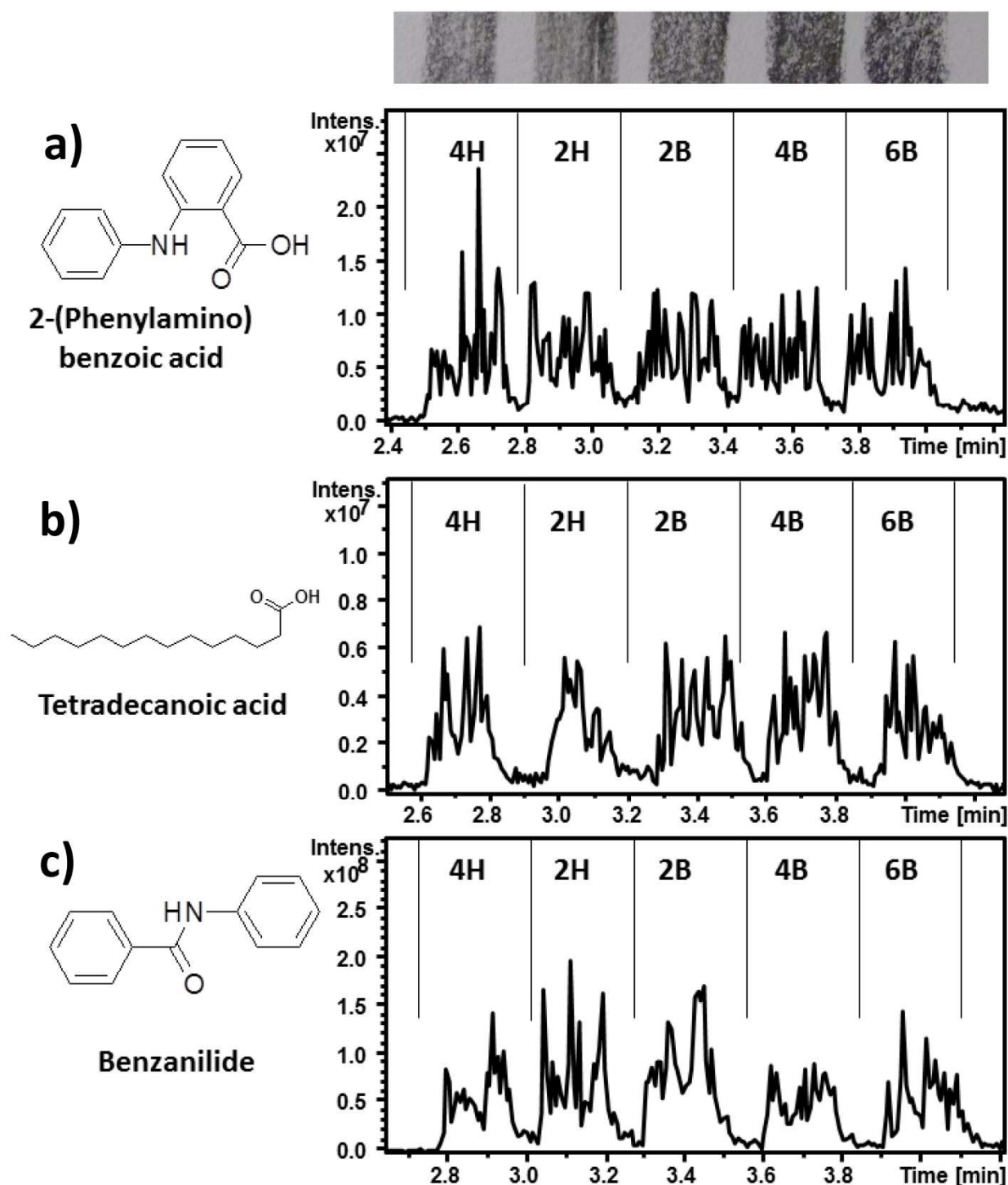
Ion mode	Samples	Concentration (mg/mL)	Molecular weight	Detected ion	Plasma temperature	S/N of white band	S/N of black band
Negative ion mode	Tetradecanoic acid	<u>5</u>	228	227	25 °C	2	262
	Eicosanoic acid	<u>2</u>	312	311	25 °C	<1	127
	Stearic acid	<u>5</u>	284	283	25 °C	<1	68
	Hexadecanoic acid	<u>5</u>	256	255	25 °C	4	98
	Decanedioic acid	<u>10</u>	202	201	25 °C	1	352
	Hippuric acid	<u>10</u>	179	178	25 °C	1	81
	Barbituric acid	<u>1</u>	128	127	25 °C	2	37
	(4-amino-benzoylamino)-acetic acid	<u>10</u>	194	193	25 °C	3	106
	m-hydroxybenzoic acid	<u>5</u>	138	137	25 °C	<1	172
	o-hydroxybenzoic acid	<u>5</u>	138	137	25 °C	<1	201
	o- nitrobenzoic acid	<u>5</u>	167	166	25 °C	22	572
	2-(phenylamino) benzoic acid	<u>5</u>	213	212	25 °C	5	126
	Cholic acid	<u>10</u>	408	407	400 °C	<1	6
	Octadecylamine	<u>2</u>	269	270	25 °C	1	593
	Benzoin	<u>10</u>	212	213	25 °C	6	212
Positive ion mode	Anthranone	<u>2</u>	194	195	25 °C	278	756
	Benzanilide	<u>2</u>	197	198	25 °C	4	342
	2-Cyclohexylamino-ethanesulfonic acid *	<u>5</u>	207	126	25 °C	1	208
	Theophylline	<u>10</u>	180	181	25 °C	2	35
	Methyltestosterone	<u>10</u>	302	302	25 °C	<1	117
	Chloramphenicol	<u>10</u>	322	323	25 °C	<1	56
	N-(3-acetyl-4-hydroxyphenyl) butyramide	<u>10</u>	221	222	25 °C	3	497
	4-amino-3,5-dimethyl-1,2,4-triazole	<u>10</u>	112	113	25 °C	2	89
	Artemisinin**	<u>10</u>	282	300	25 °C	2	155
	Rhodamin B	<u>10</u>	443	443	25 °C	4	15
	9-aminoacridine	<u>10</u>	194	195	25 °C	<1	50
	Acetaminophen	<u>10</u>	151	152	25 °C	<1	102
	Progesterone	<u>10</u>	314	315	25 °C	2	173
	4-aminoantipyrine	<u>10</u>	203	204	25 °C	6	603
	1-benzoylnaphthalene	<u>5</u>	232	233	25 °C	48	842
	2-hydroxy-methyloxybenzophenone	<u>10</u>	228	229	25 °C	22	989
	Prednisone	<u>10</u>	358	359	400 °C	<1	26
	Cortisone	<u>10</u>	360	361	400 °C	<1	19
	Methylprednisolone	<u>10</u>	374	375	400 °C	<1	15
	Dexamethasone	<u>10</u>	392	393	400 °C	<1	21
	Prednisone acetate	<u>10</u>	400	401	400 °C	<1	59

	Prednisolone acetate	<u>10</u>	402	403	400 °C	<1	39
	Betamethasone dipropionate	<u>10</u>	504	505	400 °C	<1	13
	Beclometasone dipropionate	<u>10</u>	520	521	400 °C	<1	9
	Glibenclamide	<u>10</u>	493	494	400 °C	<1	24
	Metronidazole	<u>10</u>	171	172	400 °C	4	712
	Prednisolone	<u>10</u>	360	361	400 °C	<1	73
	Phenanthrene	<u>10</u>	178	179	400 °C	<1	50
	Carbazole	<u>10</u>	167	168	400 °C	<1	15
	Fluorescein	<u>1</u>	332	333	400 °C	26	36
	Sudan III	<u>5</u>	352	353	400 °C	294	2137
	Rosiglitazone	<u>10</u>	357	358	400 °C	<1	161
	Gliquidone	<u>10</u>	527	528	400 °C	<1	5
	Gliclazide	<u>10</u>	323	324	400 °C	<1	130
	Nateglinide	<u>10</u>	317	318	400 °C	<1	235
	Glipizide	<u>10</u>	445	446	400 °C	<1	19

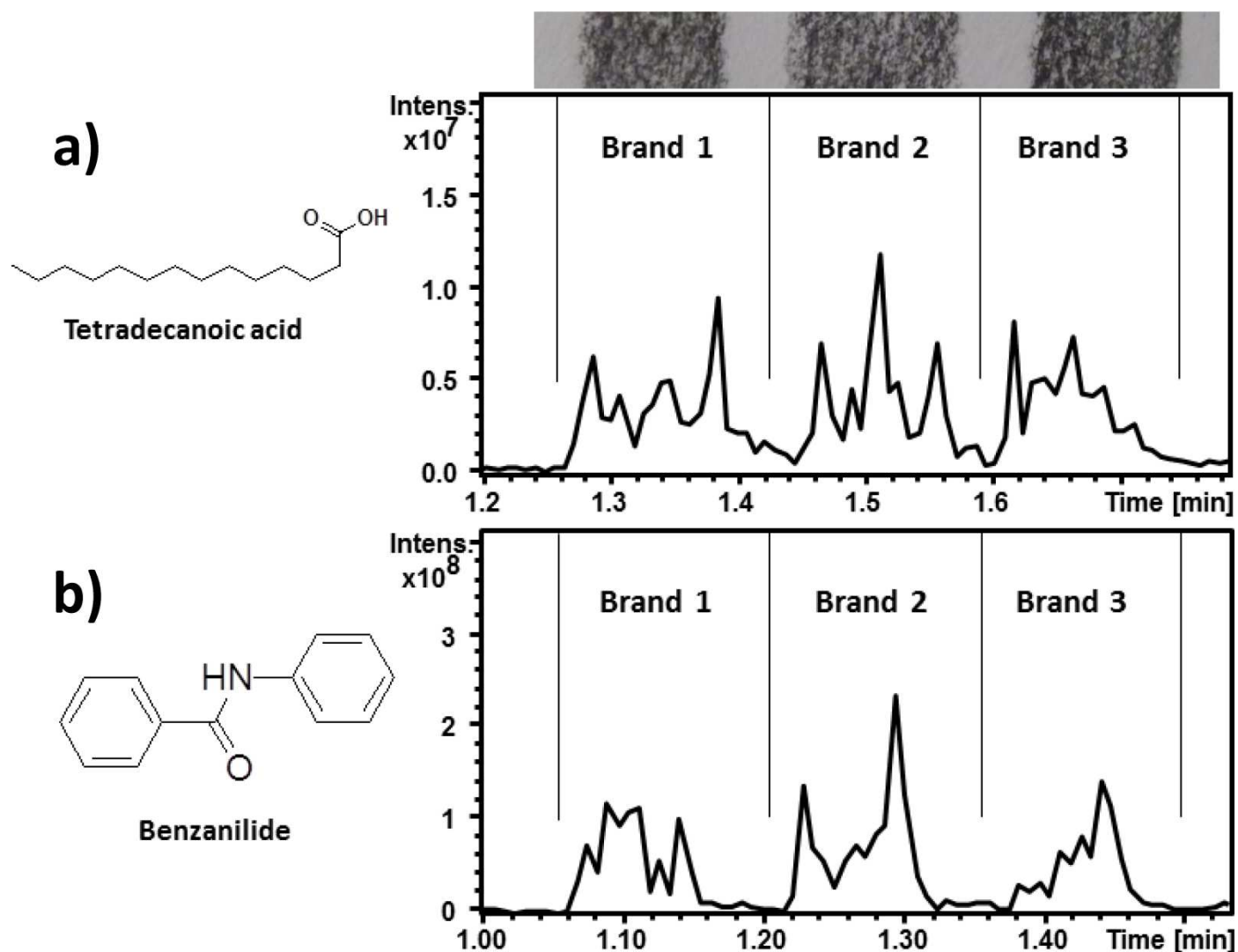
\* The ion of 126 was obtained due to the loss of SO<sub>2</sub> of 2-Cyclohexylamino-ethanesulfonic acid

\*\* Artemisinin was detected in the form of [M+NH<sub>4</sub>]<sup>+</sup>=300

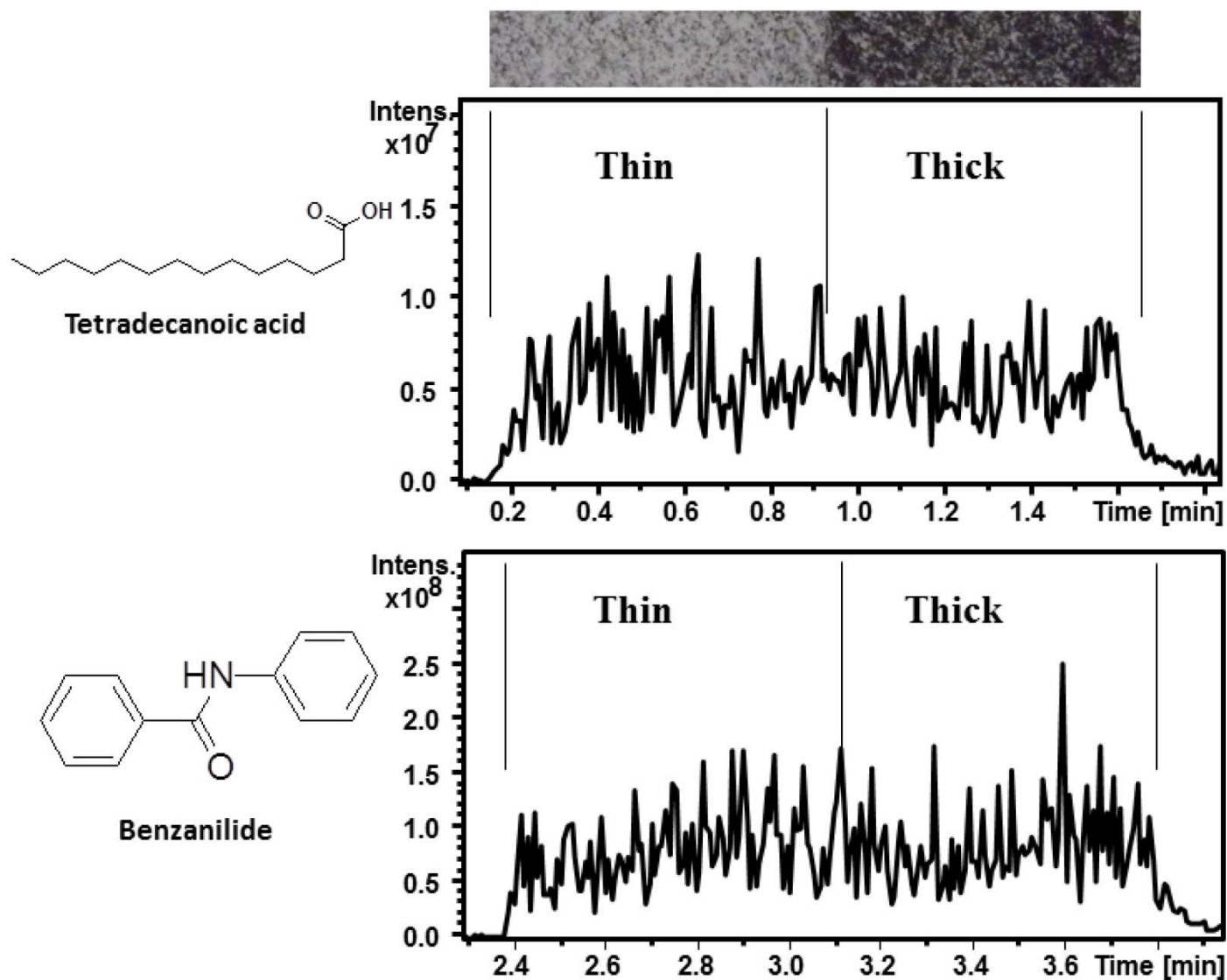
**Figure S1** Comparisons of the performance of five different types of pencil with three compounds under visible laser (532 nm). a) Extracted ion chromatogram (EIC) of 2-(phenylamino) benzoic acid ( $[M-H]^- = 212$ ) was detected in negative ion mode at 25 °C. b) EIC of Tetradecanoic acid ( $[M-H]^- = 227$ ) was detected in negative ion mode at 25 °C. c) EIC of Benzanilide ( $[M+H]^+ = 195$ ) was detected in positive ion mode at 25 °C.



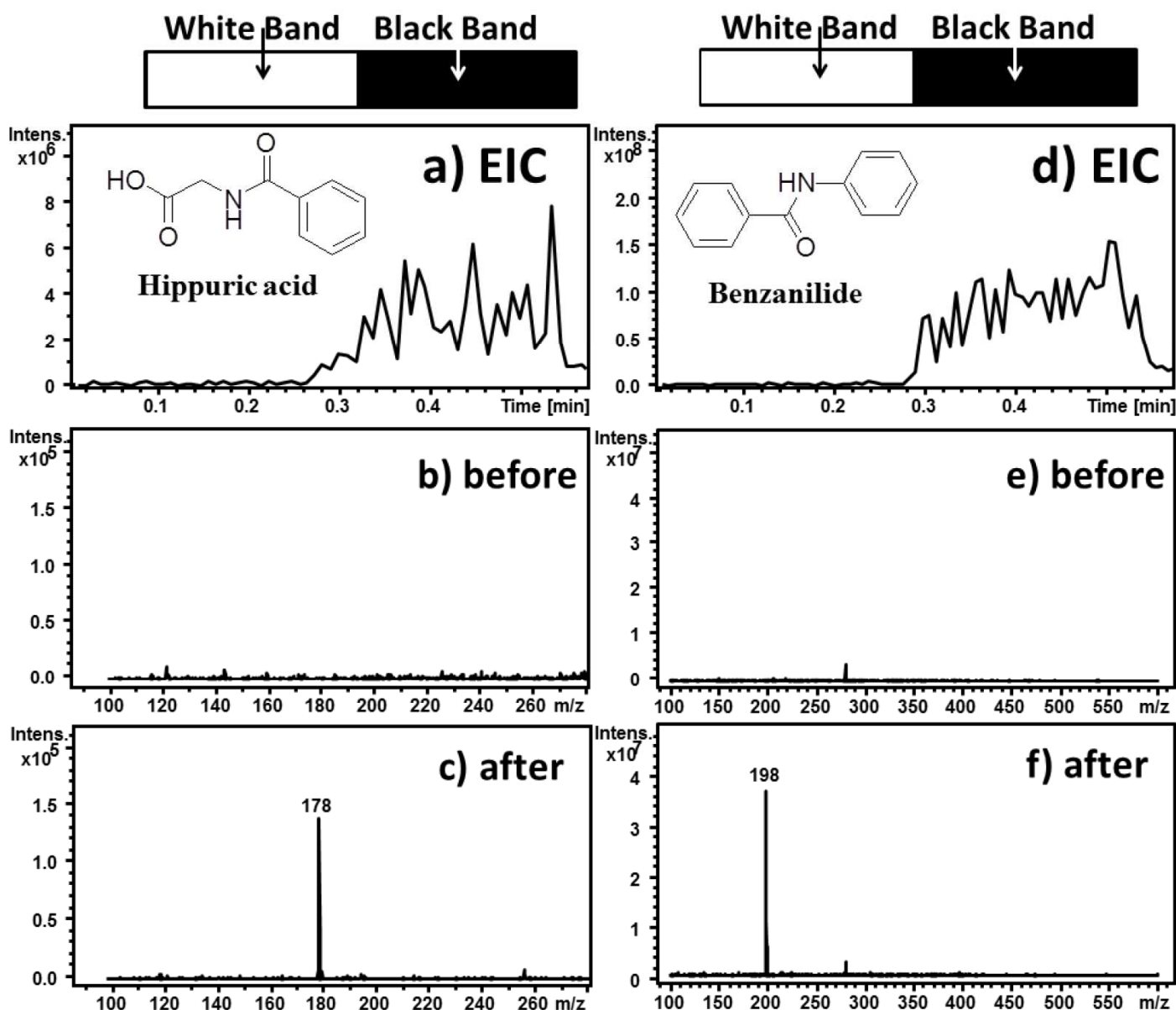
**Figure S2** Comparisons of the performance of three different brands of pencil with two compounds under visible laser (532 nm). a) EIC of Tetradecanoic acid ( $[M-H]^- = 227$ ) was detected in negative ion mode. b) EIC of Benzanilide ( $[M+H]^+ = 195$ ) was detected in positive ion mode.



**Figure S3** Comparisons of the performance of different thickness of pencil with two compounds under visible laser (532 nm). a) EIC of Tetradecanoic acid ( $[M-H]^- = 227$ ) was detected in negative ion mode. b) EIC of Benzanilide ( $[M+H]^+ = 195$ ) was detected in positive ion mode.

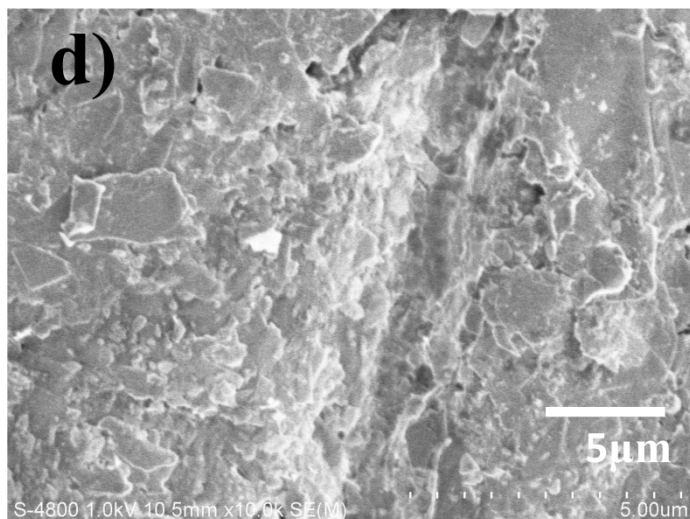
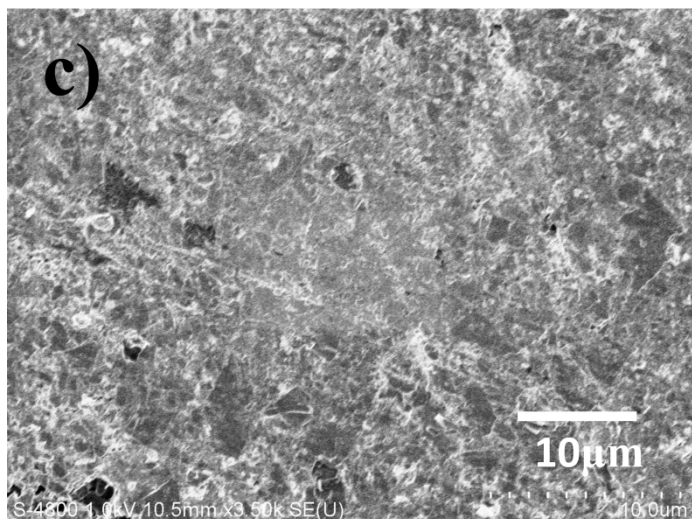
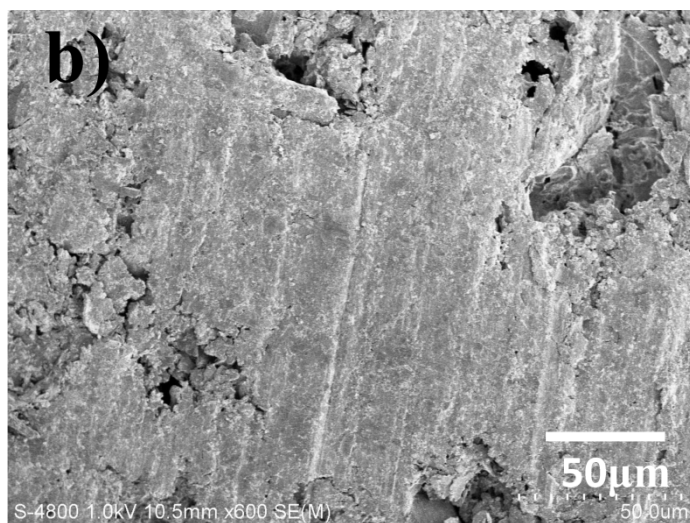
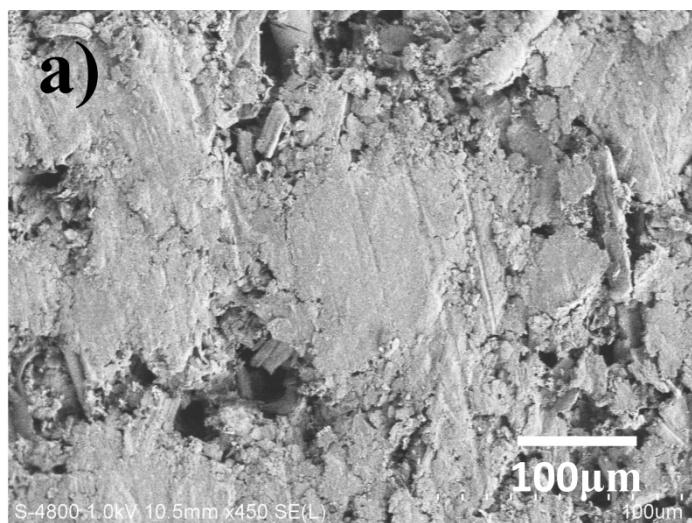


**Figure S4** Mass spectra of hippuric acid and benzanilide in two bands under 532 nm of laser (0~0.3 was white band; and 0.3~0.6 was black band) using microcrystalline cellulose-coated TLC plate as the medium for sample loading. a) Extracted ion chromatography of hippuric acid ( $M_r=179$ ) in negative ion mode. b) Averaged mass spectrum of white band, on which no graphite was drawn. c) Averaged mass spectrum of black band, on which graphite was painted. d) Extracted ion chromatography of 4-aminoantipyrine ( $M_r=197$ ) in positive ion mode. e) Averaged mass spectrum of white band. f) Averaged mass spectrum of black band.





**Figure S5** SEM images of graphite-attached cellulose-coated TLC plate with different magnification times. a) 100  $\mu\text{m}$ , b) 50  $\mu\text{m}$ , c) 10  $\mu\text{m}$ , d) 5  $\mu\text{m}$





**Figure S6** Mass spectra of 1-benzoylnaphthalene and anthranone in two bands under 355 nm of laser (0~0.3 was white band; and 0.3~0.6 was black band) using paper as the medium for sample loading. a) Extracted ion chromatography of 1-benzoylnaphthalene ( $[M+H]^+=233$ ) in positive ion mode. b) Extracted ion chromatography of anthranone ( $[M+H]^+=195$ ) in positive ion mode.

