

Supporting Information for

Photoinduced three-component coupling reactions of electron deficient alkenes, dienes and active methylene compounds

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Table S1. PET-promoted three component coupling reaction of **1-3**.^a

entry	1	3	molar ratio of 1:2:3	sens ^b	base	time (h)	yields ^c (%)	
							4	5
1	1a	3a	1:1:20	phenanthrene	Na ₂ CO ₃	20	28	15
2	1a	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	30	14
3	1a	3a	5:1:20	phenanthrene	Na ₂ CO ₃	20	28	25
4	1a	3a	2:1:10	phenanthrene	Na ₂ CO ₃	20	15	3
5	1a	3a	2:1:5	phenanthrene	Na ₂ CO ₃	20	13	6
6	1a	3a	2:1:20	phenanthrene	Na ₂ CO ₃	1	8	5
7	1a	3a	2:1:20	phenanthrene	Na ₂ CO ₃	40	42	18
8	1a	3a	2:1:20	phenanthrene	Na ₂ CO ₃	91	7	5
9	1a	3a	2:1:20	pyrene	Na ₂ CO ₃	1	14	<1
10	1a	3a	2:1:20	pyrene	Na ₂ CO ₃	20	46	17
11	1a	3a	2:1:20	pyrene	Na ₂ CO ₃	40	58	18
12	1a	3a	2:1:20	pyrene	Na ₂ CO ₃	91	4	4
13	1a	3a	2:1:20	anthracene	Na ₂ CO ₃	20	28	5
14	1a	3a	2:1:20	naphthalene	Na ₂ CO ₃	20	23	17
15	1a	3a	2:1:20	none	Na ₂ CO ₃	1	<1	<1
16	1a	3a	2:1:20	none	Na ₂ CO ₃	20	29	11
17	1a	3a	2:1:20	none	Na ₂ CO ₃	40	<1	<1
18	1a	3a	2:1:20	phenanthrene	K ₂ CO ₃	20	14	10
19	1a	3a	2:1:20	phenanthrene	Cs ₂ CO ₃	20	43	18
20	1a	3a	2:1:20	phenanthrene	NaOH	20	23	11
21	1a	3a	2:1:20	phenanthrene	<i>t</i> -BuOK	20	0	0
22	1a	3a	2:1:20	phenanthrene	none	20	0	0
23	1a	3a	2:1:20	phenanthrene	Cs ₂ CO ₃	40	38	13
24	1a	3a	2:1:20	pyrene	Cs ₂ CO ₃	20	43	22
25	1a	3a	2:1:20	pyrene	Cs ₂ CO ₃	40	53	18
26	1b	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	29	37
27	1b	3a	2:1:20	pyrene	Na ₂ CO ₃	20	39	42
28	1b	3a	2:1:20	none	Na ₂ CO ₃	20	27	37
29	1c	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	46	16
30	1c	3a	2:1:20	pyrene	Na ₂ CO ₃	20	2	1
31	1c	3a	2:1:20	none	Na ₂ CO ₃	20	33	22
32	1d	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	9	6
33	1d	3a	2:1:20	pyrene	Na ₂ CO ₃	20	<1	<1
34	1d	3a	2:1:20	none	Na ₂ CO ₃	20	27	28
35	1e	3a	2:1:20	pyrene	Na ₂ CO ₃	20	0	0
36	1f	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	20	9
37	1f	3a	2:1:20	pyrene	Na ₂ CO ₃	20	<1	<1
38	1f	3a	2:1:20	none	Na ₂ CO ₃	20	28	19
39	1g	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	20	6
40	1g	3a	2:1:20	pyrene	Na ₂ CO ₃	20	<1	<1
41	1g	3a	2:1:20	none	Na ₂ CO ₃	20	5	7
42	1h	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	34	16
43	1h	3a	2:1:20	pyrene	Na ₂ CO ₃	20	<1	<1
44	1h	3a	2:1:20	none	Na ₂ CO ₃	20	28	13
45	1i	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	21	7
46	1i	3a	2:1:20	pyrene	Na ₂ CO ₃	20	9	6
47	1i	3a	2:1:20	none	Na ₂ CO ₃	20	21	8
48	1j	3a	2:1:20	phenanthrene	Na ₂ CO ₃	20	5	33
49	1j	3a	2:1:20	pyrene	Na ₂ CO ₃	20	0	53
50	1j	3a	2:1:20	none	Na ₂ CO ₃	20	0	38
51	1a	3b	2:1:20	phenanthrene	Na ₂ CO ₃	20	0	0
52	1a	3c	2:1:20	phenanthrene	Na ₂ CO ₃	20	0	15
53	1a	3d	2:1:20	phenanthrene	Na ₂ CO ₃	20	0	28

^a **1** (1-5 mmol), **2** (1 mmol), **3** (5-20 mmol), sens (0.25 mmol), base (10 mmol), CH₃CN (10 mL), H₂O (2.5 mL), Pyrex vessel, 450 W high pressure mercury lamp, rt. ^b sens = photosensitizer. ^c Determined by using ¹H NMR analysis, based on **2** used.