

Supplementary Material

Cu(OAc)₂-mediated Cross-coupling Reaction of Benzophenone
N,N,N-Trimethylhydrazonium Salts and Aryl Boronic Acids

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1. General method (S-2)
2. Physical data of *N,N,N*-trimethylhydrazonium iodide **10a-10c** (S-3)
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General Methods.

All reactions were carried out under a nitrogen atmosphere. ^1H NMR (400 MHz) and ^{13}C NMR (100 MHz) spectra were recorded on Bruker Avance 400, ^{13}C NMR (126 MHz) spectra were recorded on JEOL JNM-A 500 in CDCl_3 , [In CDCl_3 , CHCl_3 (for ^1H , $\delta = 7.24$) or CDCl_3 (for ^{13}C , $\delta = 77.0$) was used as an internal standard.

Elemental analyses were recorded on Yanaco MT-5, and carried out at Center for Instrumental Analysis, Faculty of Engineering, Kyusyu Institute of Technology. Column chromatography was performed on silica gel (Fuji Silysia Silica gel PSQ-100B).

Physical Data

Benzophenone *N,N,N*-trimethylhydrazonium iodide **10a**:^[1] δ_{H} (400 MHz, CDCl_3) 7.67-7.61 (m 3H), 7.57-7.48 (m, 3H), 7.42-7.36 (m, 4H), 3.77 (s, 9H). δ_{C} (101 MHz, CDCl_3) 173.2, 135.4, 133.2, 131.5, 131.1, 129.6, 129.4, 128.7, 127.7, 58.7. Anal calcd for $\text{C}_{16}\text{H}_{19}\text{IN}_2$: C, 52.47; H, 5.23; N, 7.65. Found: C, 52.59; H, 5.23; N, 7.61.

[1] P. A. S. Smith, C. R. Messing, *J. Org. Chem.* **1988**, 53, 2959.

4,4'-Dimethoxybenzophenone *N,N,N*-trimethylhydrazonium iodide **10b**: δ_{H} (400 MHz, CDCl_3) 7.46 (d, *J* 9.0, 2H), 7.30 (d, *J* 8.7, 2H), 7.11 (d, *J* 8.7, 2H), 6.85 (d, *J* 9.0, 2H), 3.92 (s, 3H), 3.84 (s, 3H), 3.70 (s, 9H). δ_{C} (126 MHz, CDCl_3) 172.5, 163.5, 161.1, 131.4, 129.3, 127.9, 123.0, 114.8, 113.9, 58.54, 55.52, 55.47. Anal calcd for $\text{C}_{18}\text{H}_{23}\text{IN}_2\text{O}_2$: C, 50.72; H, 5.44; N, 6.57. Found: C, 50.72; H, 5.41; N, 6.52.

3,3',4,4'-Tetramethoxybenzophenone *N,N,N*-trimethylhydrazonium iodide **10c**: δ_{H} (400 MHz, CDCl_3) 7.38-7.34 (m, 1H), 7.04 (d, *J* 8.2, 1H), 6.88 (brd, *J* 8.1, 1H), 6.81-6.73 (m, 3H), 3.99 (s, 3H), 3.91 (s, 3H), 3.89 (s, 3H), 3.77 (s, 3H). δ_{C} (126 MHz, CDCl_3) 172.0, 153.3, 150.6, 149.5, 148.8, 128.1, 125.3, 123.3, 120.6, 111.0, 110.9, 110.3, 110.0, 58.5, 56.7, 56.1, 56.0, 55.9. Anal calcd for $\text{C}_{20}\text{H}_{27}\text{IN}_2\text{O}_4$: C, 49.39; H, 5.60; N, 5.76. Found: C, 49.47; H, 5.31; N, 5.75.

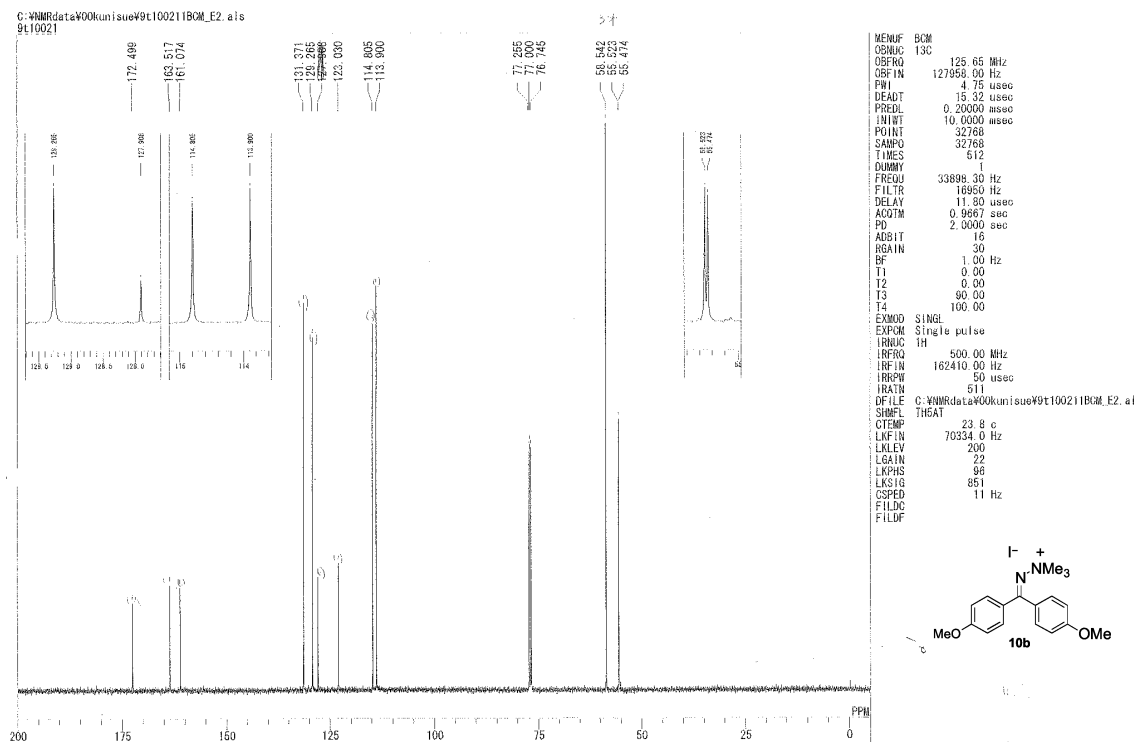
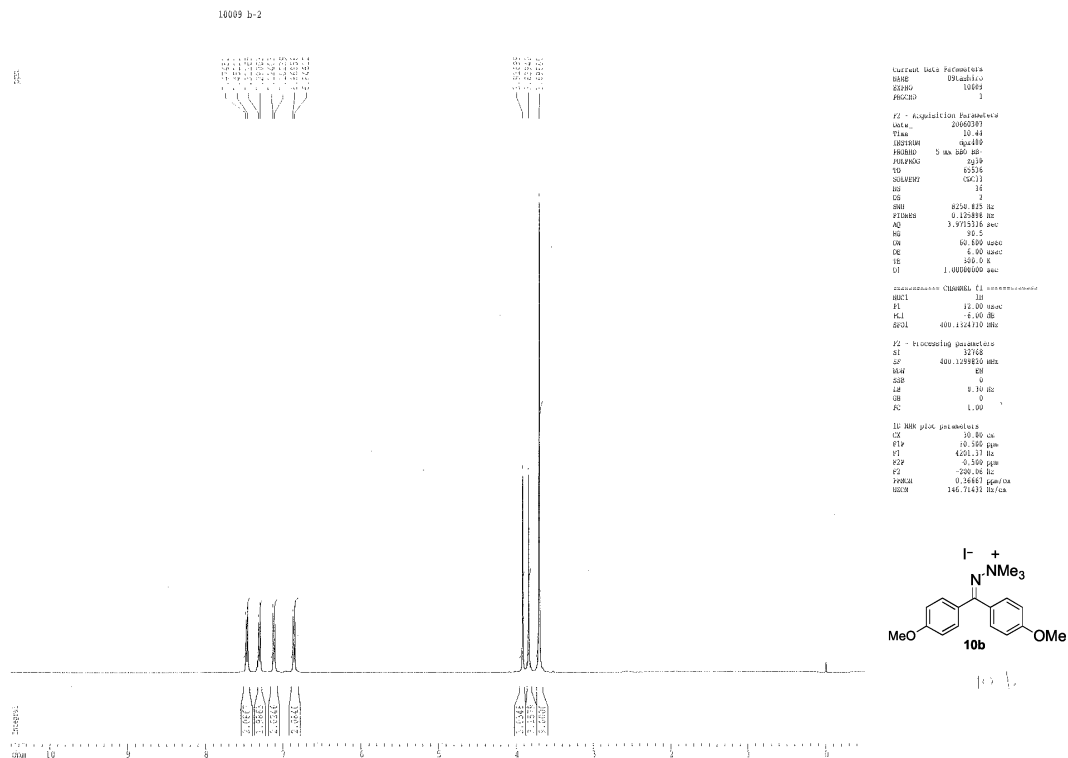
N-Diphenylmethylen-4-methylphenylamine **14a**: δ_{H} (400 MHz, CDCl_3) 7.72 (d, J 7.1, 2H), 7.43 (t, J 6.9, 1H), 7.37 (t, J 6.8, 2H), 7.27-7.21 (m, 3H), 7.12-7.07 (m, 2H), 6.92 (d, J 8.2, 2H), 6.61 (d, J 8.2, 2H), 2.20 (s, 3H). δ_{C} (101 MHz, CDCl_3) 167.9, 148.6, 139.9, 136.5, 132.6, 130.6, 129.6, 129.3, 129.1, 128.5, 128.2, 127.9, 121.0, 20.8.

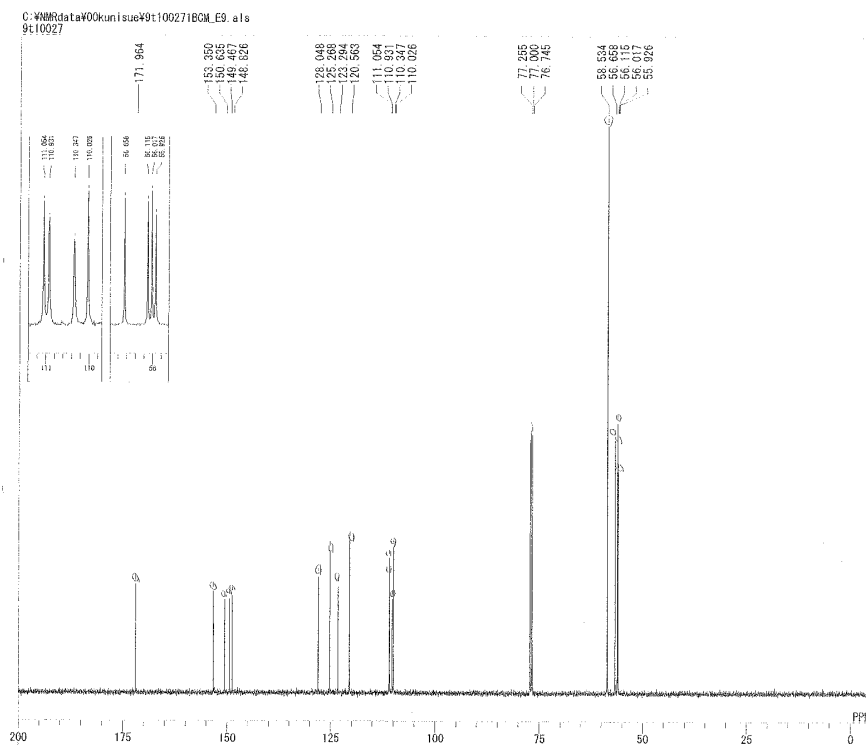
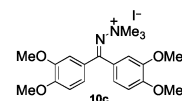
N-Di(4-methoxyphenyl)methylen-4-methylphenylamine **14f**:

δ_{H} (400 MHz, CDCl_3) 7.67(d, J 8.8, 2H) 7.04 (d, J 8.7, 2H) 6.95 (d, J 8.1, 2H) 6.89 (d, J 8.8, 2H), 6.76 (d, J 8.7, 2H), 6.62 (d, J 8.2, 2H) 3.84 (s, 3H) 3.77 (s, 3H) 2.23 (s, 3H). δ_{C} (126 MHz, CDCl_3) 167.0, 161.5, 159.4, 148.9, 133.0, 132.0, 131.3, 131.0, 129.0, 128.7, 121.1, 113.3, 113.1, 55.3, 55.1, 20.8

N-Di(3,4-dimethoxyphenyl)methylen-4-methylphenylamine **14g**:

δ_{H} (400 MHz, CDCl_3) 7.58 (d, J = 1.9 Hz, 1H) 7.10 (dd, J 1.9, 6.4, 1H), 6.95 (d, J 8.1, 2H), 6.82 (d, J 8.4, 1H), 6.78-6.72 (m, 2H), 6.64-6.57 (m, 3H), 3.93 (s, 3H), 3.92 (s, 3H), 3.86 (s, 3H), 3.60 (s, 3H). δ_{C} (126 MHz, CDCl_3) 167.0, 151.2, 149.1, 148.9, 148.7, 148.0, 142.5, 132.9, 132.1, 129.1, 128.6, 123.7, 123.0, 120.8, 113.2, 110.0, 109.8, 55.9, 55.7, 21.0.

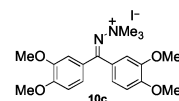


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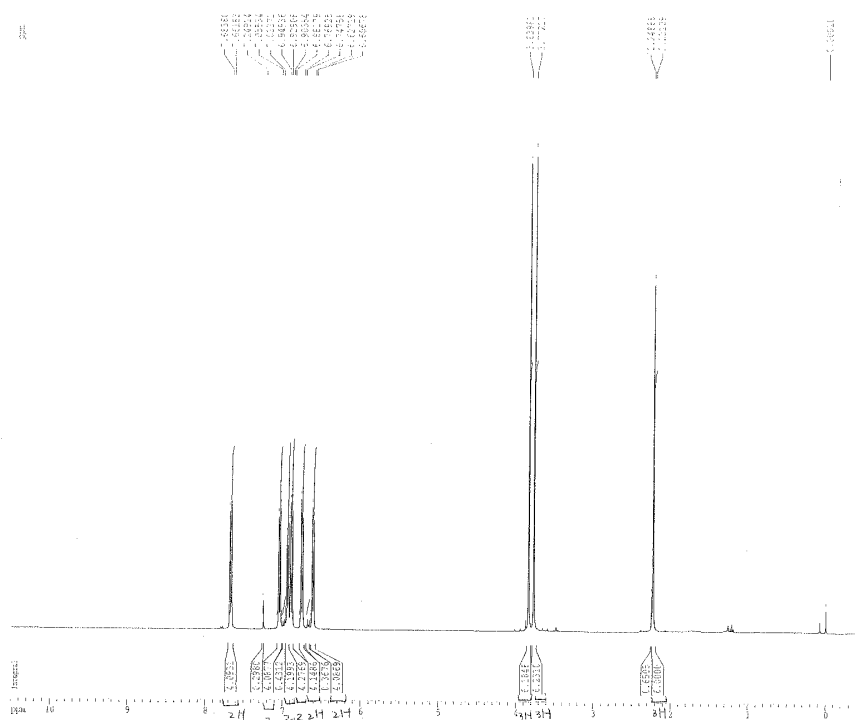
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10012 b-3



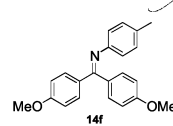
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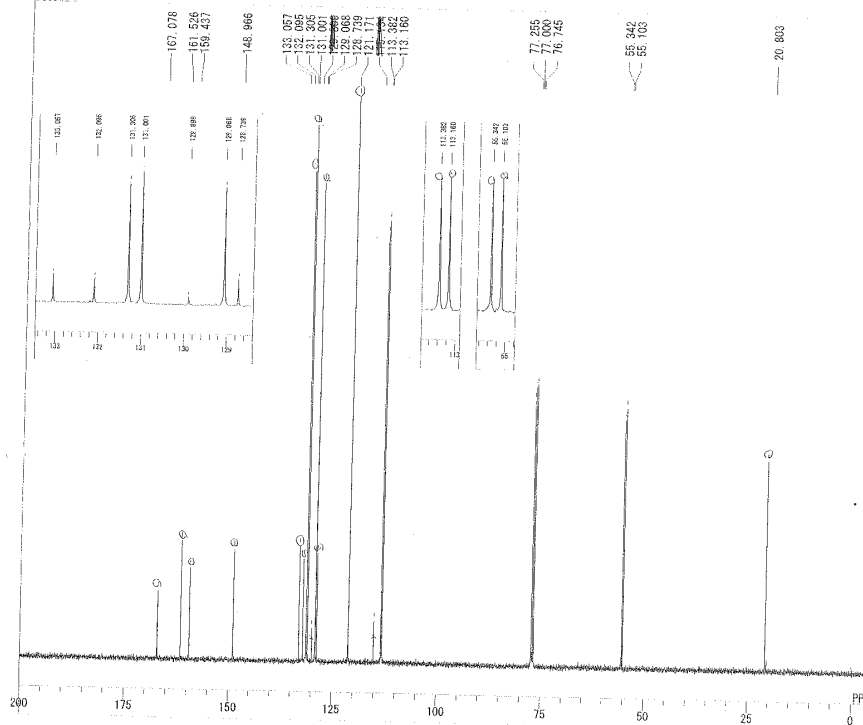
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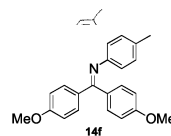
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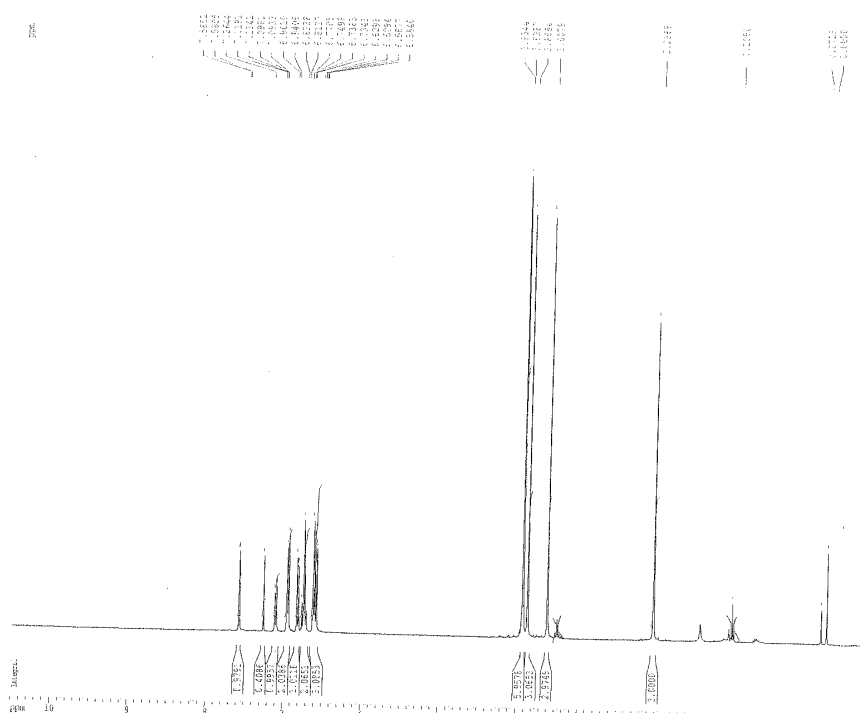
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10016 e-5



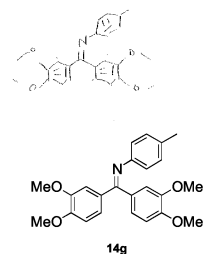
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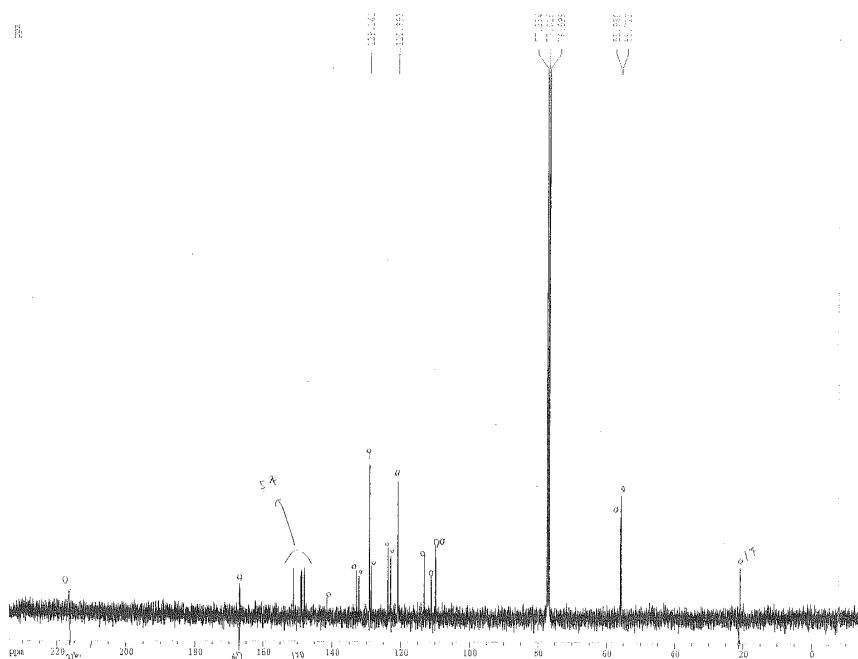
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10017 e-5



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1D NMR plot parameters
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