

Supplementary material

Copper-catalyzed synthesis of unsymmetrical diorganyl chalcogenides (Te/Se/S) from boronic acids under solvent-free conditions

Sumbal Saba ^{1,2}, Giancarlo V. Botteselle ³, Marcelo Godoi ⁴, Tiago E. A. Frizon ⁵, Fábio Z. Galetto ¹, Jamal Rafique ^{1,*} and Antonio L. Braga ^{1,*}

¹ Departamento de Química, Universidade Federal de Santa Catarina, UFSC, Florianópolis 88040-900, SC, Brazil

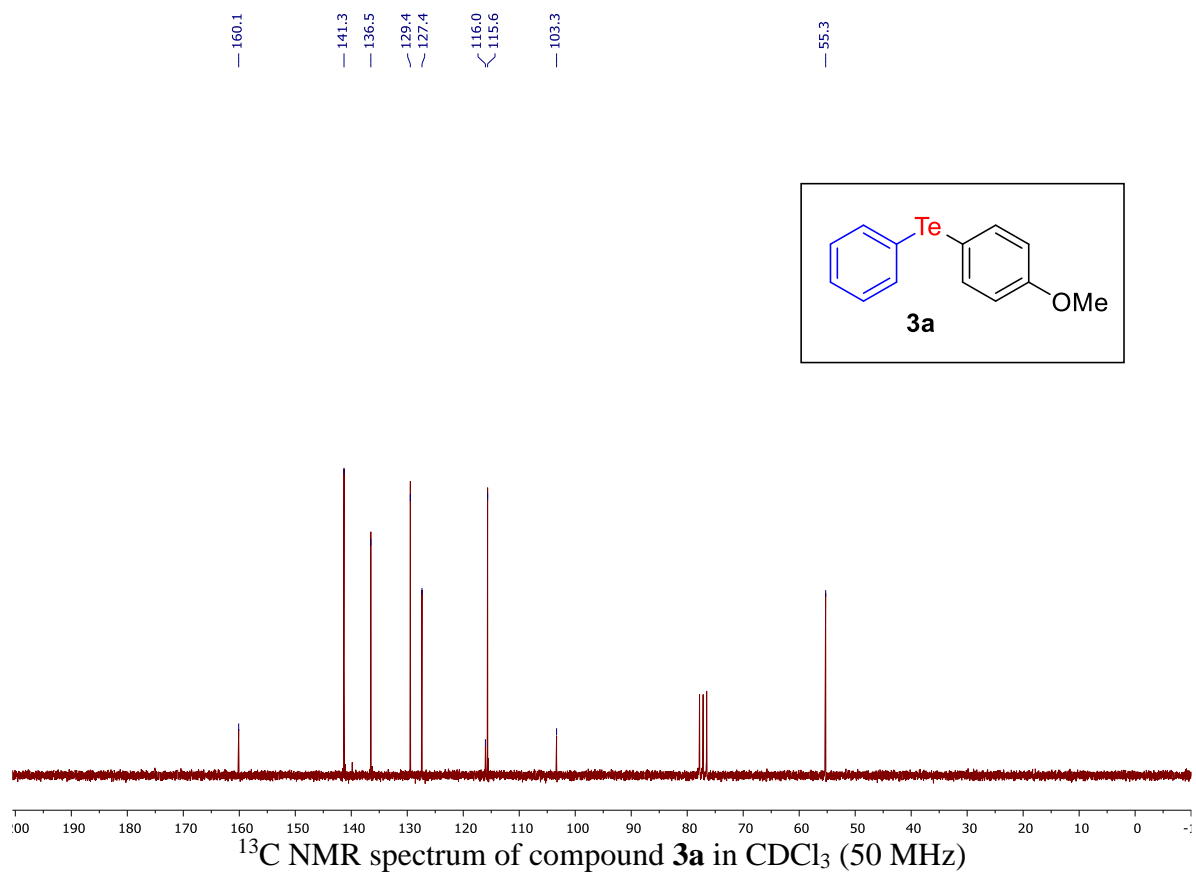
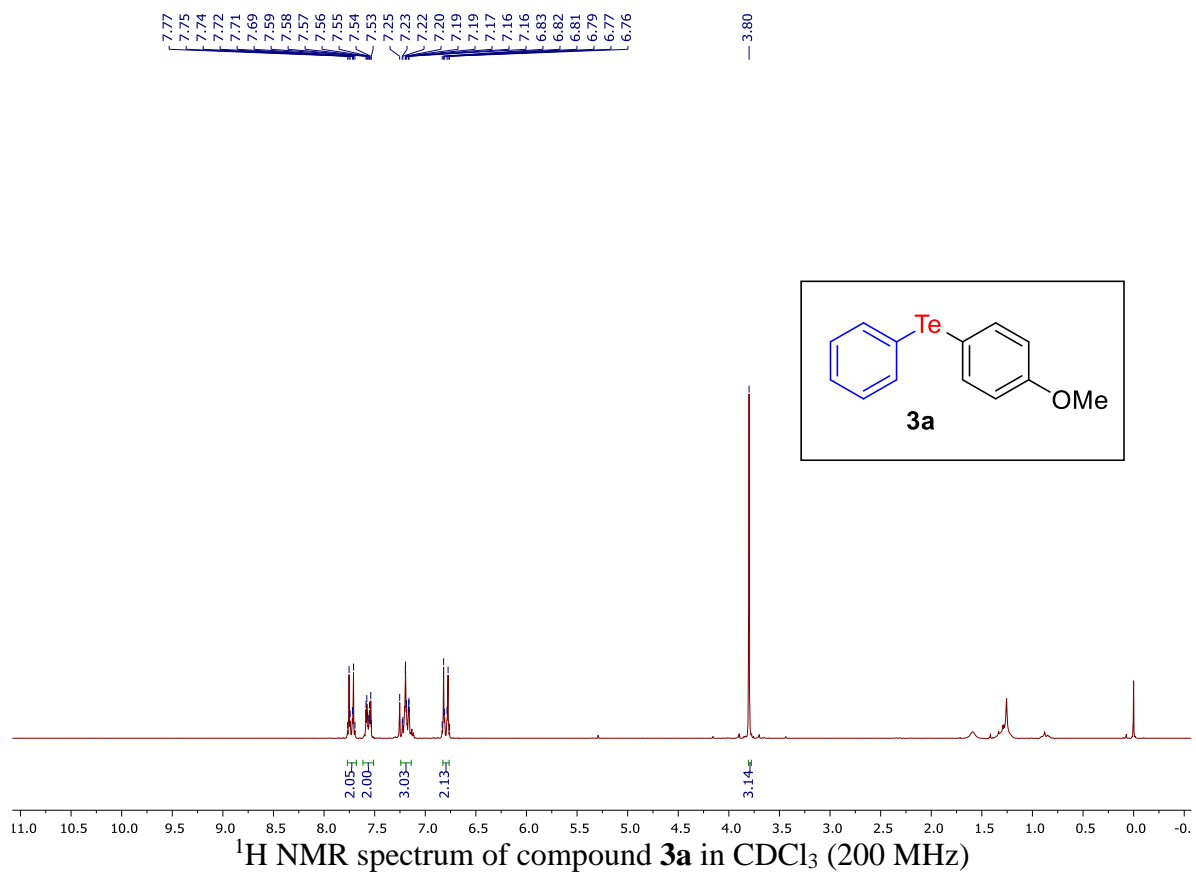
² Department of chemistry, Shaheed Benazir Bhutto Women University, Peshawar, 25000, KPK, Pakistan

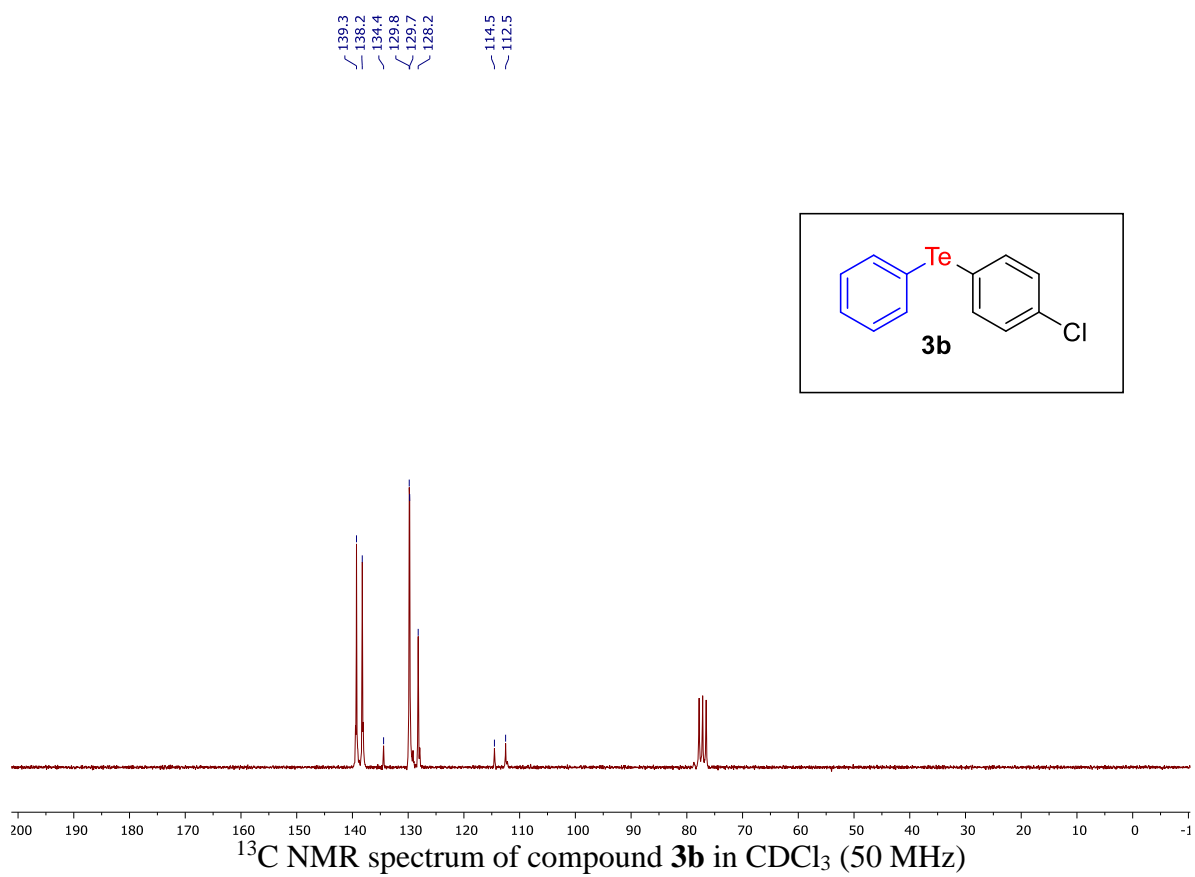
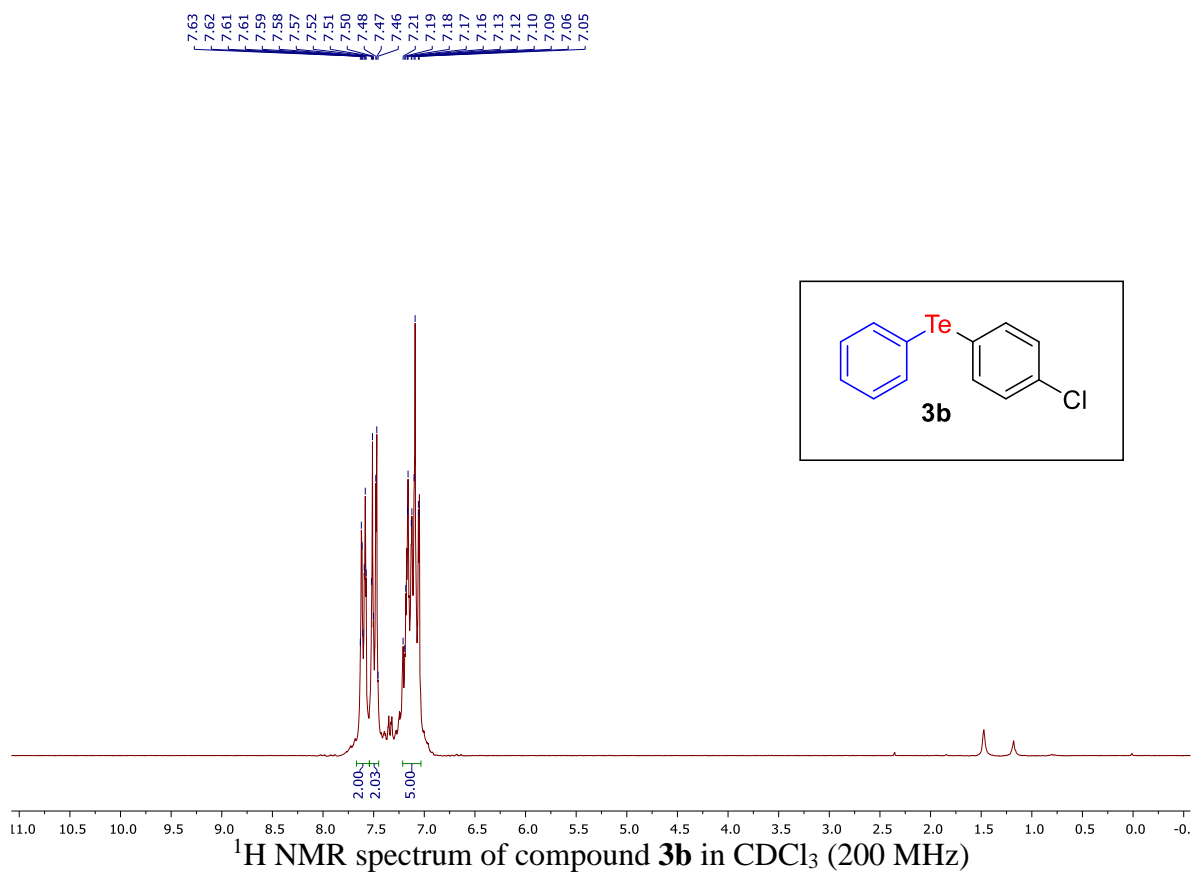
³ Laboratório de Pesquisa Química, CECE, Universidade Estadual do Oeste do Paraná UNIOESTE, 85819-110, PR, Brazil

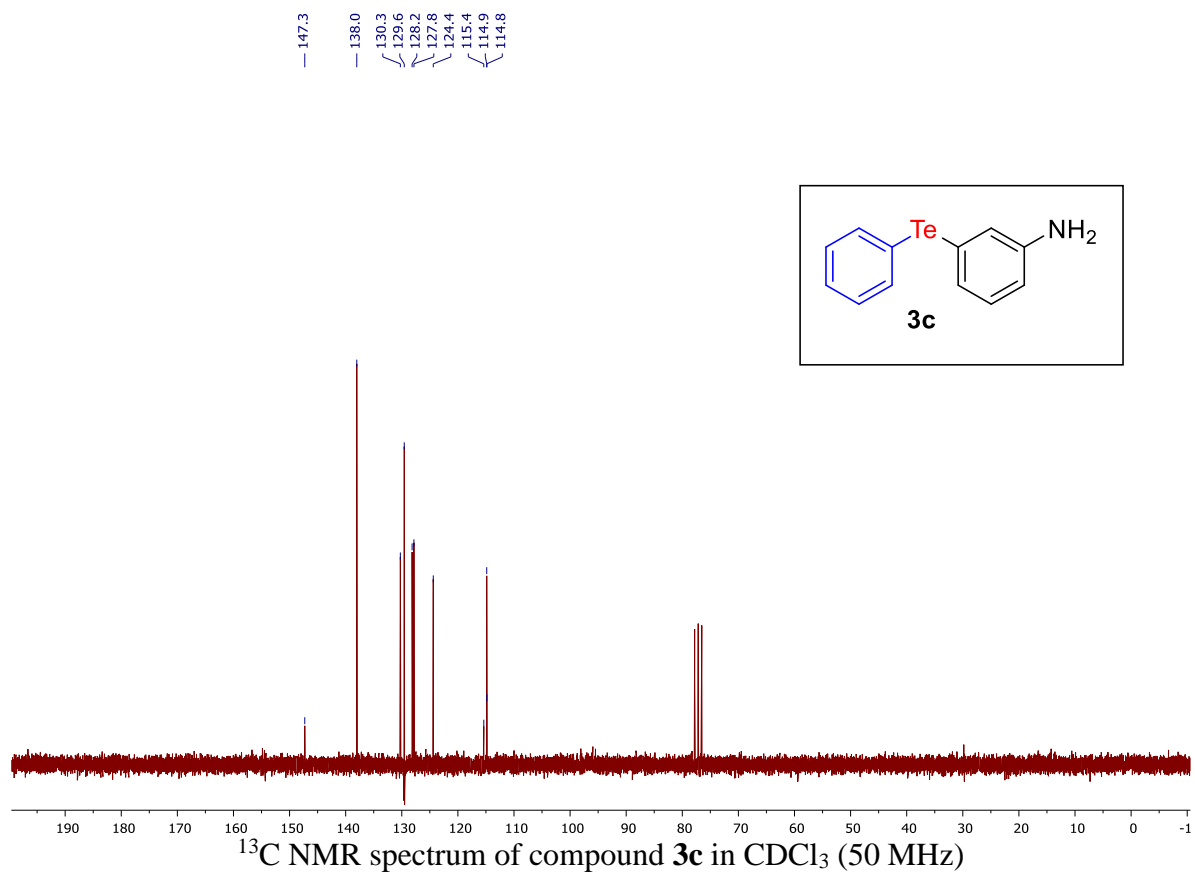
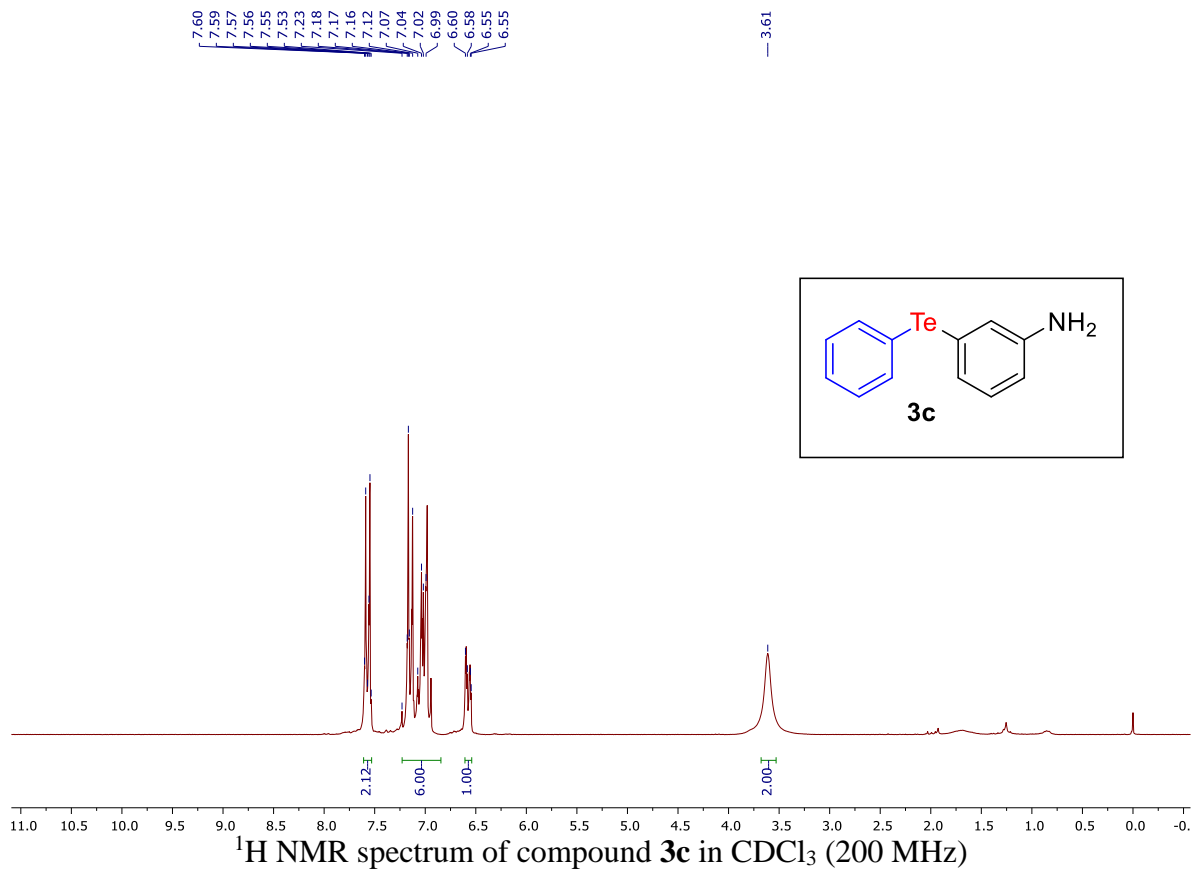
⁴ Escola de Química e Alimentos, Universidade Federal do Rio Grande-Campus Santo Antônio da Patrulha, RS, Brazil

⁵ Universidade Federal de Santa Catarina, UFSC, Campus Araranguá, 88905-120, SC, Brazil

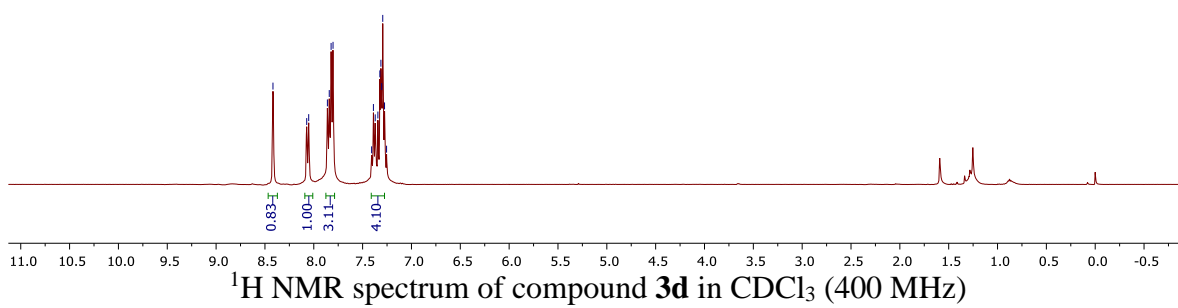
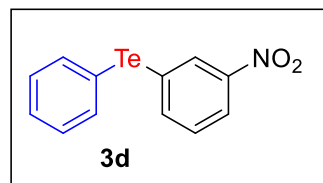
*E-mail: jamal.chm@gmail.com (J.R.); braga.antonio@ufsc.br (A.L.B.)



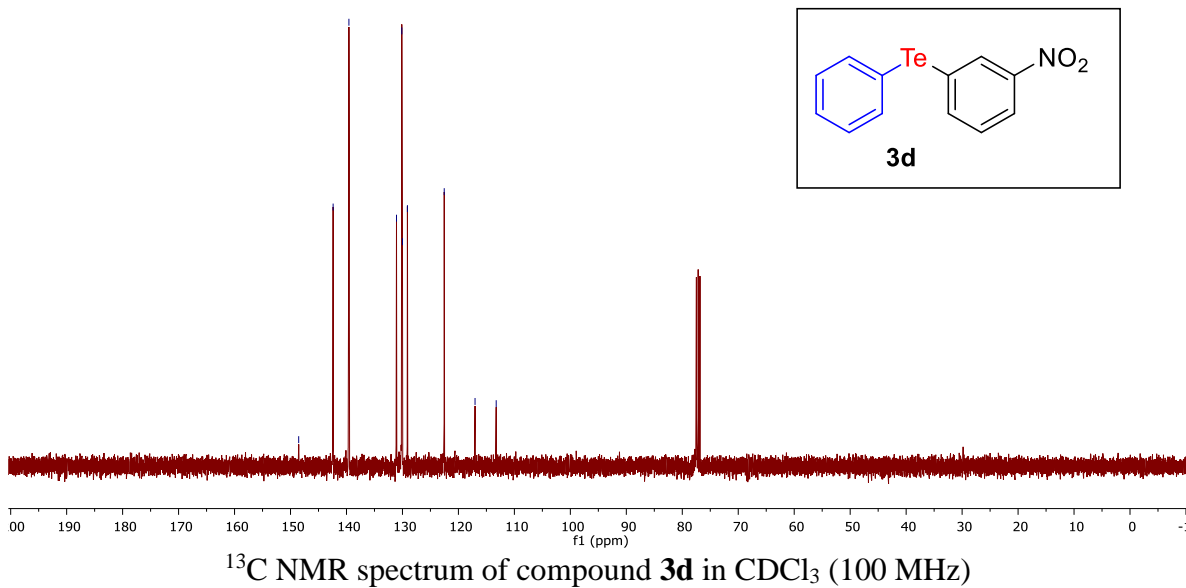
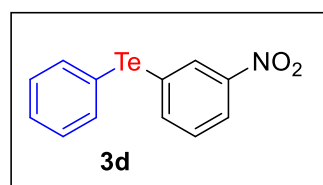


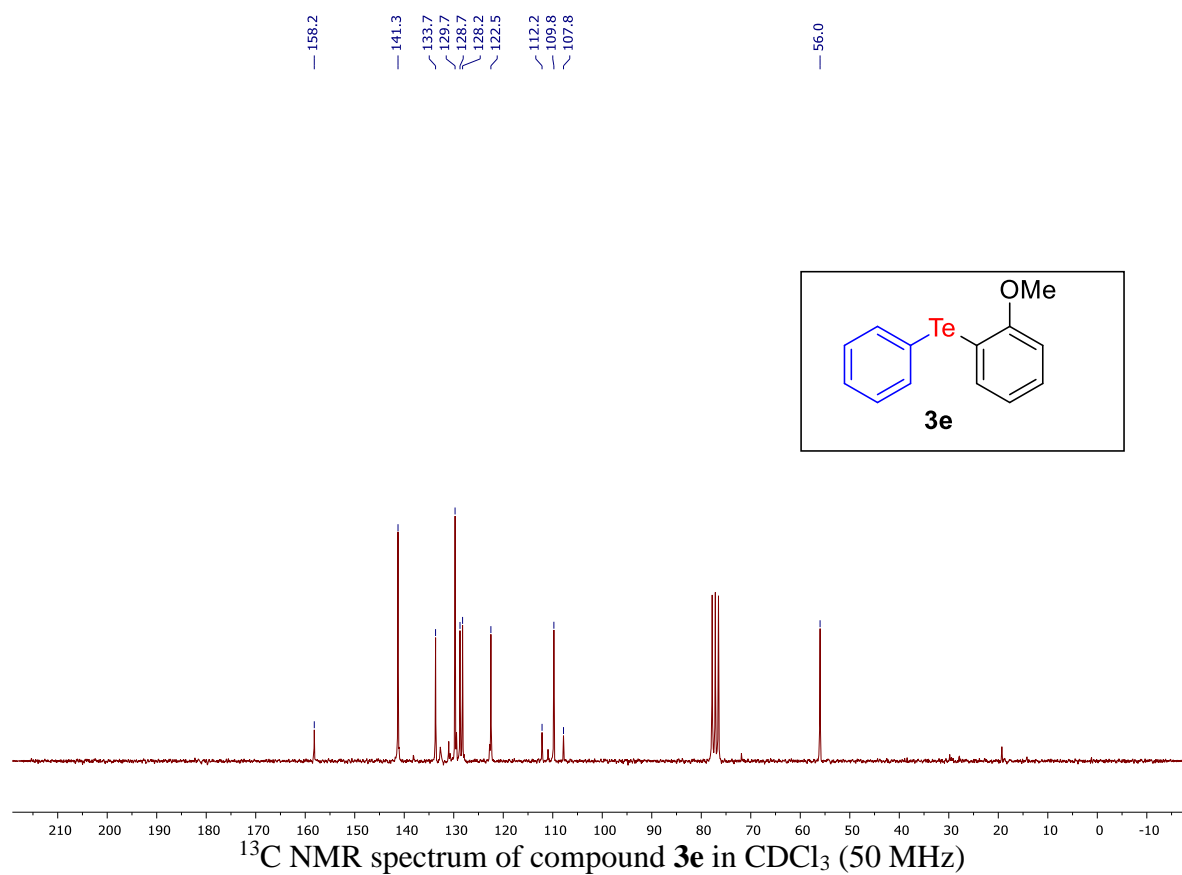
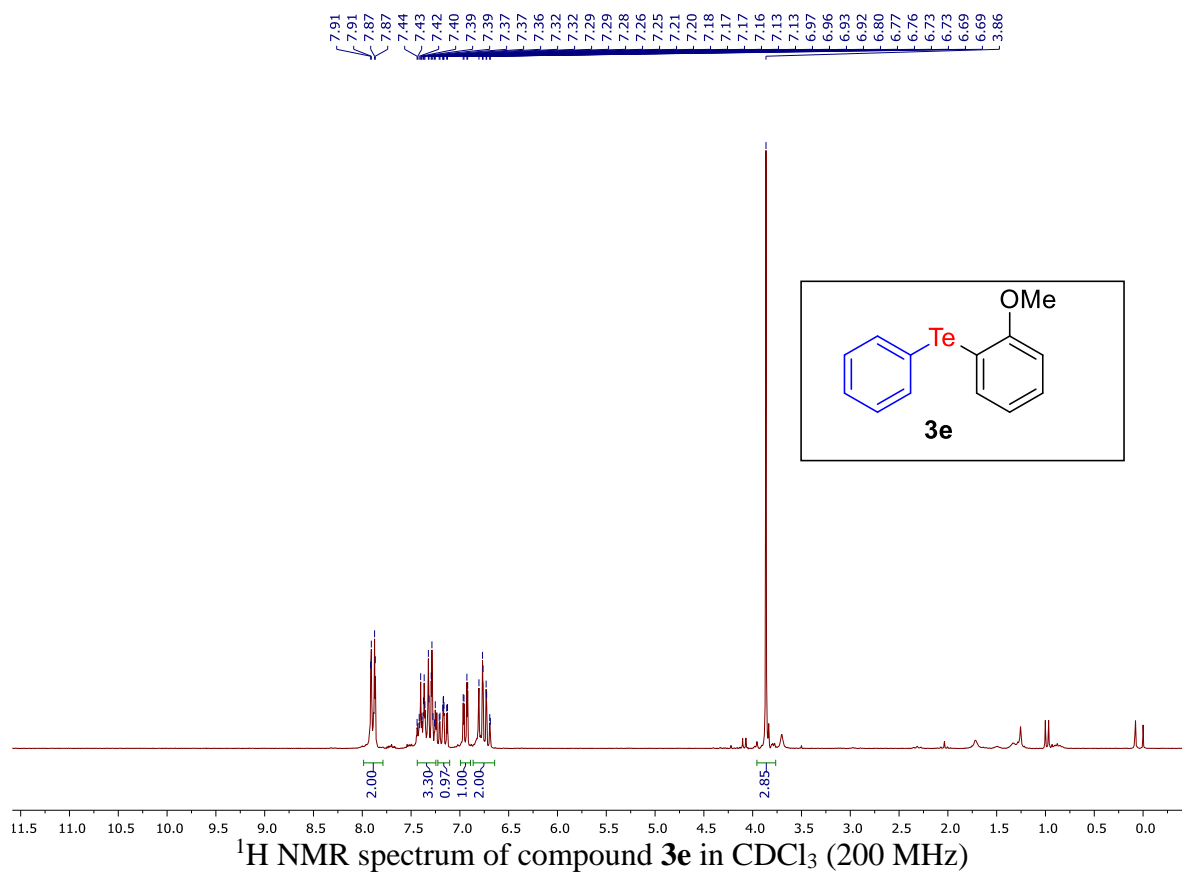


8.42
8.07
8.05
7.86
7.84
7.82
7.80
7.41
7.39
7.37
7.34
7.32
7.31
7.30
7.29
7.28
7.25

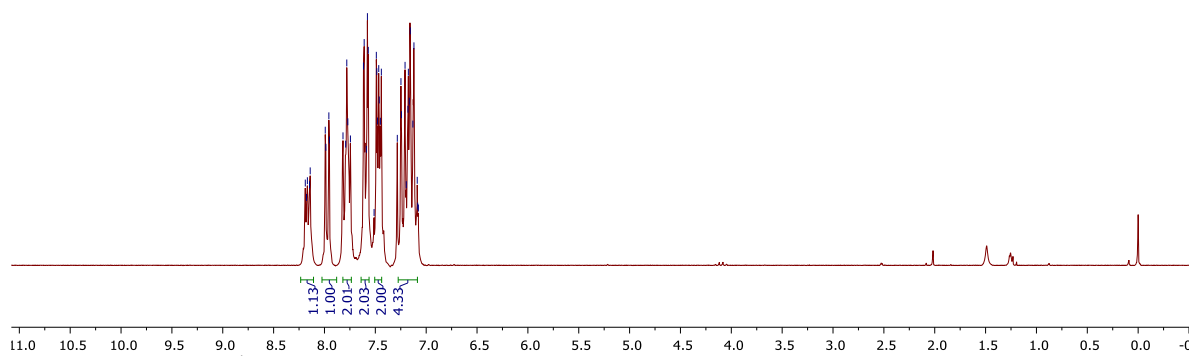
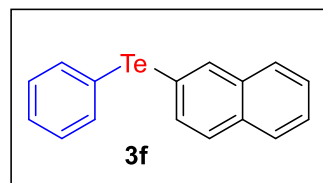


148.5
142.4
139.6
131.1
130.1
130.0
129.1
122.5
117.0
113.2



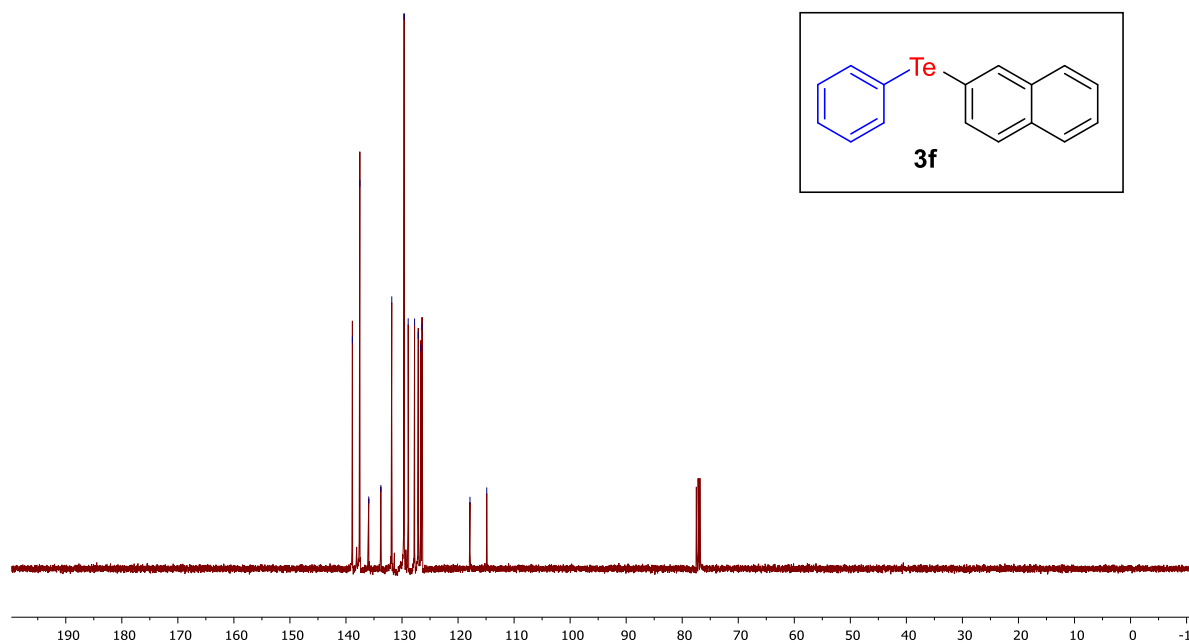
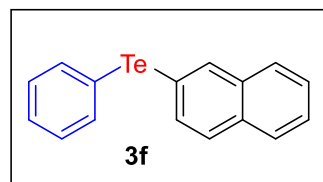


8.19
8.18
8.17
8.15
8.14
7.99
7.96
7.85
7.82
7.79
7.78
7.77
7.74
7.62
7.61
7.59
7.58
7.57
7.51
7.49
7.48
7.47
7.46
7.45
7.44
7.28
7.25
7.24
7.21
7.20
7.18
7.18
7.17
7.16
7.13
7.12
7.09
7.08



^1H NMR spectrum of compound **3f** in CDCl_3 (200 MHz)

138.9
137.5
135.9
133.8
131.8
129.6
128.9
127.8
127.1
126.6
126.4
117.9
114.9



^{13}C NMR spectrum of compound **3f** in CDCl_3 (100 MHz)

