A New Synthesis of 2-Aryl-3-substituted Benzo[b]furans from Benzyl 2-Halophenyl Ethers

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**General Considerations.** All reactions involving air-sensitive compounds were carried out under an N₂ atmosphere in oven-dried glassware with magnetic stirring. Temperatures are reported as bath temperatures. THF was continuously refluxed and freshly distilled from sodium under nitrogen. Solvents used in extraction and purification were distilled prior to use. TLC was performed on aluminum-backed plates coated with silica gel 60 with F₂₅₄ indicator; the chromatograms were visualized by UV light (254 nm) and/or by staining with a Ce/Mo reagent, anisaldehyde or phosphomolybdic acid solution and subsequent heating. \( R_f \) values refer to silica gel. Flash column chromatography was carried out on silica gel 60, 230-400 mesh (Merck). Melting points were obtained on a Büchi-Tottoli apparatus using open capillary tubes and are uncorrected. \(^1\)H and \(^{13}\)C NMR spectra were recorded on a Varian Inova-400 or Varian Mercury-Plus 300 spectrometer. \(^1\)H NMR spectra were recorded at 400 MHz or at 300 MHz. Chemical shifts are reported in ppm from tetramethylsilane with the residual solvent resonance as the internal standard (CHCl₃: \( \delta \) 7.16). Data are reported as follows: chemical shift, multiplicity (s: singlet, br s: broad singlet, d: doublet, dd: doublet of doublets, dt: doublet of triplets, t: triplet, td: triplet of doublets, q: quartet, m: multiplet), coupling constants (\( J \) in Hz) and integration. \(^{13}\)C NMR spectra were recorded at 100.6 MHz or at 75.4 MHz using broadband proton decoupling. Chemical shifts are reported in ppm with the solvent resonance as internal standard (CDCl₃: \( \delta \) 77.16). Low-resolution electron impact mass spectra (EI-LRMS) were obtained at 70 eV on a HP 6890N/5973 or Micromass Autospec spectrometer and only the molecular ions and/or base peaks in MS are given. High-resolution mass spectrometry (HRMS) was carried out on a Micromass Autospec spectrometer. Elemental analyses were performed with Perkin Elmer and LECO CHNS-932 with VT-900 elemental analysers. HPLC analysis were carried out on a Agilent series 1100 with UV-Visible diode-array detector (G1315B) at \( \lambda = 254 \) nm and a Kromasil 100 SIL column (25 x 0.46 cm, Scharlab S.L.), with a flow rate = 1 mLmin⁻¹. In all the cases the percentage of total chromatogram integration represented by the product peak was larger than 95%. All commercially available reagents were used without purification unless otherwise indicated and were purchased from standard chemical suppliers.
Typical Procedure for the Synthesis of benzyl 2-haloaryl ethers 1 and 7. The corresponding commercially available o-halophenol or naphthol (10 mmol) and benzyl chloride derivative (10 mmol) were dissolved in acetonitrile (20 mL), potassium carbonate (1.52 g, 11 mmol) was added to the solution, and the resulting mixture was refluxed overnight. Then the mixture was cooled to room temperature, the remaining solid was filtered and the resulting solution was concentrated under reduced pressure. The residue was purified by flash chromatography (eluent: hexane/EtOAc) on silica gel to afford the corresponding ethers 1 and 7.

Benzyl 2-iodophenyl ether (1a): Treatment of 2-iodophenol (2.20 g, 10 mmol) with benzyl chloride (1.27 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1a (2.54 g, 84%) as a colorless oil: Rf 0.38 (hexane/EtOAc, 10/1); $^1$H NMR (300 MHz, CDCl$_3$) δ 7.88 (dd, $J$ = 7.7, 1.4 Hz, 1H), 7.57 (d, $J$ = 7.4 Hz, 2H), 7.50-7.28 (m, 4H), 6.91 (dd, $J$ = 8.3, 1.1 Hz, 1H), 6.79 (td, $J$ = 7.4, 1.1 Hz, 1H), 5.18 (s, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 157.1 (C), 139.5 (CH), 136.5 (C), 129.5 (CH), 128.6 (CH), 127.9 (CH), 127.0 (CH), 122.8 (CH), 112.7 (CH), 86.8 (C), 70.6 (CH$_2$); EI-LRMS m/z 310 (M$^+$, 45), 91 (100).

Benzyl 2-bromo-4-methylphenyl ether (1b): Treatment of 2-bromo-4-methylphenol (1.87 g, 10 mmol) with benzyl chloride (1.27 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1b (1.98 g, 72%) as a white solid: mp 43-45 ºC; $^1$H NMR (300 MHz, CDCl$_3$) δ 7.51-7.43 (m, 2H), 7.42-7.33 (m, 3H), 7.33-7.3 (m, 1H), 7.03 (dd, $J$ = 8.3, 1.4 Hz, 1H), 6.84 (d, $J$ = 8.3 Hz, 1H), 5.14 (s, 2H), 2.28 (s, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 153.0 (C), 136.9 (C), 133.9 (CH), 132.0 (C), 128.9 (CH), 128.7 (CH), 128.0 (CH), 127.1 (CH), 114.0 (CH), 112.3 (C), 71.1 (CH$_2$), 20.3 (CH$_3$); EI-LRMS m/z 278 (M$^+$+2, 8), 276 (M$^+$, 8), 91 (100). HRMS calcd. for C$_{14}$H$_{13}$BrO: 276.0150. Found: 276.0138.
1-Benzyl 2-bromo-4-chlorophenyl ether (1c): Treatment of 2-bromo-4-chlorophenol (2.07 g, 10 mmol) with benzyl chloride (1.27 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1c (2.68 g, 90%) as a white solid: mp 50-52 °C; \(^1H\) NMR (300 MHz, CDCl\(_3\)) \(\delta\) 7.57 (d, \(J = 2.7\) Hz, 1H), 7.50-7.31 (m, 5H), 7.2 (dd, \(J = 8.8, 2.7\) Hz, 1H), 6.84 (d, \(J = 8.8\) Hz, 1H), 5.14 (s, 2H); \(^13C\) NMR (75.4 MHz, CDCl\(_3\)) \(\delta\) 153.9 (C), 136.1 (C), 133.0 (CH), 128.7 (CH), 128.3 (CH), 128.2 (CH), 127.1 (CH), 126.4 (C), 114.5 (CH), 113.1 (C), 71.2 (CH\(_2\)); EI-LRMS \(m/z\) 300 (M\(^+\)4, 3), 298 (M\(^+\)2, 10), 296 (M\(^+\), 8), 91 (100). HRMS calcd. for C\(_{13}\)H\(_{10}\)BrClO: 295.9604. Found: 295.9617.

\(p\)-Methylbenzyl 2-iodophenyl ether (1d): Treatment of 2-iodophenol (2.20 g, 10 mmol) with 4-methylbenzyl chloride (1.41 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1d (2.53 g, 78%) as a white solid: mp 44-46 °C; \(^1H\) NMR (300 MHz, CDCl\(_3\)) \(\delta\) 7.82 (dd, \(J = 7.6, 1.6\) Hz, 1H), 7.42 (d, \(J = 8.1\) Hz, 2H), 7.29 (td, \(J = 7.6, 1.6\) Hz, 1H), 7.23 (d, \(J = 8.1\) Hz, 2H), 6.88 (dd, \(J = 8.3, 1.3\) Hz, 1H), 6.74 (td, \(J = 7.6, 1.3\) Hz, 1H), 5.13 (s, 2H), 2.39 (s, 3H); \(^13C\) NMR (75.4 MHz, CDCl\(_3\)) \(\delta\) 157.3 (C), 139.6 (CH), 137.7 (C), 133.5 (C), 129.5 (CH), 129.3 (CH), 127.2 (CH), 122.8 (CH), 112.8 (CH), 87.0 (C), 70.8 (CH\(_2\)), 21.3 (CH\(_3\)); EI-LRMS \(m/z\) 324 (M\(^+\), 36), 105 (100). HRMS calcd. for C\(_{14}\)H\(_{13}\)IO: 324.0011. Found: 324.0022.

2-Iodophenyl 1-naphthylmethyl ether (1e): Treatment of 2-iodophenol (2.20 g, 10 mmol) with 1-(chloromethyl)naphthalene (1.77 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1e (2.95 g, 82%) as a white solid: mp 56-58 °C; \(^1H\) NMR (300 MHz, CDCl\(_3\)) \(\delta\) 8.13 (d, \(J = 8.0\) Hz, 1H), 8.00-7.87 (m, 3H), 7.79 (d, \(J = 7.2\) Hz, 1H), 7.68-7.50 (m, 3H), 7.34 (td, \(J = 7.5, 1.2\) Hz, 1H), 7.00 (d, \(J = 8.0\) Hz, 1H), 6.80 (td, \(J = 7.5, 1.2\) Hz, 1H), 5.57 (s, 2H); \(^13C\) NMR (75.4 MHz, CDCl\(_3\)) \(\delta\) 157.2 (C), 139.6 (CH), 133.6 (C), 131.7 (C), 131.0 (C), 129.5 (CH), 128.8 (CH), 128.7 (CH), 126.4
(CH), 125.9 (CH), 125.4 (CH), 123.6 (CH), 122.9 (CH), 112.7 (CH), 86.9 (C), 69.3 (CH₂); EI-LRMS: m/z 360 (M⁺, 8), 141 (100). HRMS calcd. for C₁₇H₁₃IO: 360.0011. Found: 360.0025.

2-Bromophenyl 2-fluorobenzyl ether (1f): Treatment of 2-bromophenol (1.73 g, 10 mmol) with 2-fluorobenzyl chloride (1.45 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 15/1) on silica gel, gave 1f (2.56 g, 91%) as a colorless oil: Rf 0.35 (hexane/EtOAc, 20/1); ¹H NMR (300 MHz, CDCl₃) δ 7.68 (td, J = 7.4, 1.2 Hz, 1H), 7.62-7.57 (m, 1H), 7.38-7.18 (m, 3H), 7.1 (t, J = 8.7 Hz, 1H), 7.00 (d, J = 8.2 Hz, 1H), 6.92-6.85 (m, 1H), 5.2 (s, 2H); ¹³C NMR (75.4 MHz, CDCl₃) δ 160.2 (d, J = 247.0 Hz, C), 154.8 (C), 133.5 (CH), 129.6 (d, J = 8.4 Hz, CH), 129.3 (d, J = 4.0 Hz, CH), 128.6 (CH), 124.5 (d, J = 3.4 Hz, CH), 123.8 (d, J = 14.0 Hz, C), 122.4 (CH), 115.3 (d, J = 20.8 Hz, CH), 113.7 (CH), 112.5 (C), 64.5 (d, J = 4.9 Hz, CH₂); EI-LRMS: m/z 282 (M⁺+2, 9), 280 (M⁺, 9), 109 (100). HRMS calcd. for C₁₃H₁₀BrFO: 279.9899. Found: 279.9906.

2-Iodophenyl 2-methoxybenzyl ether (1g): Treatment of 2-iodophenol (2.20 g, 10 mmol) with 2-methoxybenzyl chloride (1.57 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 1g (2.45 g, 72%) as a white solid: mp 73-75 ºC; ¹H NMR (300 MHz, CDCl₃) δ 7.80 (dd, J = 7.5, 1.3 Hz, 1H), 7.68 (d, J = 7.5 Hz, 1H), 7.36-7.24 (m, 2H), 7.03 (t, J = 7.5 Hz, 1H), 6.95-6.85 (m, 2H), 6.73 (t, J = 7.5 Hz, 1H), 5.20 (s, 2H), 3.88 (s, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 157.3 (C), 156.3 (C), 139.5 (CH), 129.5 (CH), 128.7 (CH), 128.0 (CH), 125.0 (C), 122.6 (CH), 120.8 (CH), 112.7 (CH), 110.0 (CH), 86.8 (C), 66.0 (CH₂), 55.4 (CH₃); EI-LRMS: m/z 340 (M⁺, 3), 121 (100). HRMS calcd. for C₁₄H₁₀BrO₂: 339.9960. Found: 339.9978.

Benzyl 1-bromo-2-naphthyl ether (7a): Treatment of 1-bromo-2-naphthol (2.23 g, 10 mmol) with benzyl chloride (1.27 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 7a (2.50 g, 80%) as a white solid: mp 101-103 ºC; ¹H NMR (300 MHz, CDCl₃) δ 8.25 (d, J = 8.5 Hz,
1H), 7.8-7.74 (m, 2H), 7.61-7.57 (m, 1H), 7.56-7.51 (m, 2H), 7.45-7.37 (m, 3H), 7.37-7.32 (m, 1H), 7.30-7.25 (m, 1H), 5.32 (s, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 153.1 (C), 136.8 (C), 133.3 (C), 130.2 (C), 129.0 (CH), 128.8 (CH), 128.2 (CH), 127.8 (CH), 127.31 (CH), 127.27 (CH), 126.4 (CH), 124.7 (CH), 115.7 (CH), 110.1 (C), 71.9 (CH$_2$); EI-LRMS $m/z$ 314 (M$^{++}$+2, 9), 312 (M$^+$, 9), 91 (100). HRMS calcd. for C$_{17}$H$_{13}$BrO: 312.0150. Found: 312.0154.

Benzyl 2-bromo-1-naphthyl ether (7b): Treatment of 2-bromo-1-naphthol$^1$ (2.23 g, 10 mmol) with benzyl chloride (1.27 g, 10 mmol) and potassium carbonate (1.52 g, 11 mmol) according to the typical procedure, and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 7b (1.0 g, 32%) as a white solid: mp 48-50 ºC; $^1$H NMR (300 MHz, CDCl$_3$) δ 8.22-8.15 (m, 1H), 7.89-7.83 (m, 1H), 7.71-7.69 (m, 1H), 7.66 (d, $J$ = 8.8 Hz, 2H), 7.56 (d, $J$ = 3.0 Hz, 1H), 7.55-7.40 (m, 5H), 5.17 (s, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 152.0 (C), 137.0 (C), 134.0 (C), 130.2 (CH), 129.4 (C), 128.7 (CH), 128.4 (CH), 128.3 (CH), 128.1 (CH), 126.9 (CH), 126.7 (CH), 125.6 (CH), 122.3 (CH), 113.3 (C), 75.7 (CH$_2$); EI-LRMS $m/z$ 314 (M$^{++}$+2, 9), 312 (M$^+$, 9), 91 (100). HRMS calcd. for C$_{17}$H$_{13}$BrO: 312.0150. Found: 312.0138.

Typical Procedure for the Double Lithiation of Benzyl o-Halophenyl Ethers 1 and 7. Synthesis of Ethers 4 and 3-Hydroxy-2,3-Dihydrobenzo[b]furan 5. To a stirred solution of the corresponding starting ether 1 or 7 (1 mmol) in dry THF (2 mL) kept at -78 ºC under N$_2$ atmosphere, $t$-BuLi (2 mL of a 1.5 M solution in pentane, 3 mmol) was added and the mixture was stirred at -78 ºC for 30 min. The solution was warmed to -25 ºC and the stirring was continued at this temperature for 40 min. Then, the corresponding electrophile (2.1 mmol for the preparation of difunctionalized ethers 4 or 1 mmol when organic carboxylates were used as electrophiles) was added at -78 ºC and stirring continued at low temperature for further 30 min. The reaction mixture was then allowed to warm to room temperature and after quenching with H$_2$O it was extracted with EtOAc (3 x 25 mL). The combined organic layers were dried (Na$_2$SO$_4$), and evaporated under reduced pressure. The crude product was purified by column chromatography (eluent: hexane/EtOAc) on silica gel to afford compounds 4 and 5.
Dihydrobenzofuranols 5 were obtained as mixture of diastereoisomers and in some cases the major diastereoisomer could be isolated by column chromatography.

**α-Deuteriobenzyl 2-deuteriophenyl ether (4a):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using deuterium oxide (excess) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 50/1) on silica gel, gave 4a (0.167 g, 90%) as a white solid: mp 40-42 °C; $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.6-7.4 (m, 7H), 7.2-7.1 (m, 2H), 5.19-5.12 (m, 1H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 158.8 (C), 137.1 (C), 129.5 (CH), 129.4 (CH), 128.6 (CH), 128.5 (CH), 128.0 (CH), 127.6 (CH), 121.0 (CH), 114.9 (CH), 114.5 (t, $J = 32$ Hz, CD), 69.6 (t, $J = 23$ Hz, CHD); El-LRMS m/z 186 (M$^+$, 15), 92 (100). HRMS calcd. for C$_{13}$H$_{10}$D$_2$O: 186.1012. Found: 186.1005.

**α-Phenylthiobenzyl 2-phenylthiophenyl ether (4b):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using diphenyl disulfide (0.458 g, 2.1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 20/1) on silica gel, gave 4b (0.292 g, 73%) as a white solid: mp 52-54 °C; $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.46-7.32 (m, 8H), 7.31-7.22 (m, 5H), 7.22-7.12 (m, 4H), 6.96-6.88 (m, 2H), 6.64 (s, 1H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 154.6 (C), 138.2 (C), 134.9 (C), 134.7 (CH), 132.1 (CH), 131.9 (C), 131.8 (CH), 129.3 (CH), 128.7 (CH), 128.3 (CH), 128.3 (CH), 128.2 (CH), 128.0 (CH), 127.2 (CH), 126.3 (CH), 126.0 (C), 122.3 (CH), 114.8 (CH), 87.1 (CH); El-LRMS m/z 400 (M$^+$, 32), 197 (100). HRMS calcd. for C$_{25}$H$_{20}$OS$_2$: 400.0956. Found: 400.0969.

**3-Hydroxy-3-methyl-2-phenyl-2,3-dihydrobenzo[b]furan (5a)$^2$:** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using t-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 5/1) on silica gel, gave 5a (0.147 g, 65%) as a colorless oil: $R_f$ 0.21 (hexane/EtOAc, 5/1). Isolated as a (1.3:1, trans:cis) mixture of diastereoisomers; $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.50-6.96 (m, ArH), 5.47 (s, 1H, trans), 5.32 (s, 1H, cis), 2.85 (s, OH, trans), 1.73 (s, 3H, cis), 1.70 (s, OH, cis), 1.10 (s, 3H, trans); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 159.3 (C), 159.0 (C), 137.3 (C), 134.8 (C), 132.5 (C), 131.9 (CH), 130.3 (CH), 130.2 (CH), 128.7 (C), 128.5 (CH), 128.3 (CH), 128.1 (CH), 127.1 (CH), 126.0 (CH), 123.9 (CH), 123.7 (CH),
121.4 (CH), 110.7 (CH), 110.4 (CH), 94.8 (CH), 92.9 (CH), 81.5 (C), 78.2 (C), 25.0 (CH₃), 24.3 (CH₃);
EI-LRMS m/z 226 (M⁺, 52), 91 (100). HRMS calcd. for C₁₅H₁₄O₂: 226.0994. Found: 226.0985. HPLC
(hexane): tᵣ = 4.54 min, 4.84 min.

**trans-3-Hydroxy-2-phenyl-3-propyl-2,3-dihydrobenzo[b]furan (5b):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl butyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/Et₂O, 5/1) on silica gel, gave the major *trans*-diastereoisomer *trans*-5b (0.163 g, 64%) as a colorless oil: Rᶠ 0.27 (hexane/Et₂O, 3/1); ¹H NMR (300 MHz, CDCl₃) δ 7.48-7.43 (m, 2H), 7.41-7.37 (m, 3H), 7.37-7.28 (m, 2H), 7.04-6.97 (m, 2H), 5.47 (s, 1H), 2.84 (s, OH), 1.52-1.33 (m, 2H), 1.30-1.18 (m, 2H), 0.67 (t, J = 6.9 Hz, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 158.9 (C), 136.5 (C), 132.0 (C), 129.9 (CH), 128.2 (CH), 128.1 (CH), 126.3 (CH), 124.6 (CH), 121.1 (CH), 110.7 (CH), 94.8 (CH), 83.5 (C), 39.0 (CH₂), 16.1 (CH₂), 14.3 (CH₃); EI-LRMS m/z 236 (M⁺-H₂O, 58), 207 (100). HRMS calcd. for C₁₇H₁₆O (M⁺-H₂O): 236.1201. Found: 236.1194. HPLC
(hexane/2-PrOH, 99.6/0.4): tᵣ = 3.52 min.

**trans-3-Hydroxy-3-isopropyl-2-phenyl-2,3-dihydrobenzo[b]furan (5c):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 5/1) on silica gel, gave the major *trans*-diastereoisomer *trans*-5c (0.102 g, 40%) as a colorless oil: Rᶠ 0.44 (hexane/EtOAc, 5/1); ¹H NMR (400 MHz, CDCl₃) δ 7.63 (d, J = 7.6 Hz, 2H), 7.45-7.31 (m, 5H), 7.04-6.96 (m, 2H), 5.56 (s, 1H), 2.45 (s, OH), 1.81 (sept., J = 6.6 Hz, 1H), 0.97 (d, J = 6.6 Hz, 3H), 0.42 (d, J = 6.6 Hz, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 159.3 (C), 136.1 (C), 130.4 (C), 129.9 (CH), 128.2 (CH), 127.7 (CH), 126.0 (CH), 125.0 (CH), 121.1 (CH), 110.9 (CH), 94.4 (CH), 86.0 (C), 33.0 (CH), 16.6 (CH₃), 16.4 (CH₃); EI-LRMS m/z 254 (M⁺, 4), 211 (100). HRMS calcd. for C₁₇H₁₈O₂: 254.1307. Found: 254.1316. HPLC
(hexane/2-PrOH, 99.6/0.4): tᵣ = 3.94 min.

**trans-3-Hydroxy-3-(2-methylpropyl)-2-phenyl-2,3-dihydrobenzo[b]furan (5d):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl isovalerate (0.130 g, 1 mmol) as
electrophile and purification by column chromatography (eluent: hexane/EtOAc, 5/1) on silica gel, gave the major trans-diastereoisomer trans-5d (0.126 g, 47%) as a white solid: mp 74-76 °C; $^1$H NMR (400 MHz, CDCl$_3$) δ 7.45-7.41 (m, 2H), 7.40-7.32 (m, 4H), 7.31-7.24 (m, 1H), 7.02-6.94 (m, 2H), 5.45 (s, 1H), 2.22 (br s, OH), 1.73-1.62 (m, 1H), 1.42 (dd, $J = 14.6, 4.2$ Hz, 1H), 1.07 (dd, $J = 14.6, 7.6$ Hz, 1H), 0.73 (d, $J = 6.8$ Hz, 3H), 0.65 (d, $J = 6.8$ Hz, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 159.0 (C), 136.5 (C), 132.3 (C), 130.0 (CH), 128.3 (CH), 128.1 (CH), 126.4 (CH), 124.7 (CH), 121.2 (CH), 110.9 (CH), 95.6 (CH), 84.3 (C), 45.0 (CH$_2$), 25.0 (CH), 24.0 (CH$_3$), 23.6 (CH$_3$); EI-LRMS $m/z$ 250 (M$^+$-H$_2$O, 47), 207 (100). HRMS calcd. for C$_{18}$H$_{20}$O$_2$: 268.1463. Found: 268.1465. HPLC (hexane/2-PrOH, 99.6/0.4): $t_R = 3.99$ min.

3-tert-Butyl-3-hydroxy-2-phenyl-2,3-dihydrobenzo[b]furan (5e): Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl pivalate (0.130 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 7/1) on silica gel, gave cis-5e (0.129 g, 48%) and trans-5e (0.040 g, 15%).

Data for cis-5e: White solid; mp 72-74 °C; $^1$H NMR (300 MHz, CDCl$_3$) δ 7.36-7.28 (m, 5H), 7.26-7.21 (m, 2H), 7.02-6.94 (m, 2H), 5.8 (s, 1H), 1.37 (br s, 1H), 1.15 (s, 9H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 160.0 (C), 137.0 (C), 130.1 (CH), 129.2 (C), 128.6 (CH), 128.2 (CH), 126.71 (CH), 126.65 (CH), 120.7 (CH), 109.7 (CH), 87.5 (CH), 87.0 (C), 38.6 (C), 24.5 (CH$_3$); EI-LRMS $m/z$ 250 (M$^+$-H$_2$O, 42), 235 (100). HRMS calcd. for C$_{18}$H$_{20}$O$_2$: 268.1463. Found: 268.1455. HPLC (hexane/2-PrOH, 99.4/0.6): $t_R = 6.97$ min.

Data for trans-5e: Colorless oil; $R_f$ 0.36 (hexane/EtOAc, 5/1); $^1$H NMR (300 MHz, CDCl$_3$) δ 7.62 (d, $J = 5.8$ Hz, 2H), 7.40-7.02 (m, 7H), 5.53 (s, 1H), 2.34 (br s, 1H), 0.74 (s, 9H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 159.5 (C), 136.9 (C), 132.5 (C), 129.6 (CH), 128.4 (CH), 128.1 (CH), 125.8 (CH), 120.8 (CH), 110.9 (CH), 95.6 (CH), 87.7 (C), 38.3 (C), 25.3 (CH$_3$); EI-LRMS $m/z$ 250 (M$^+$-H$_2$O, 4), 133 (100).
3-Hydroxy-2-phenyl-3-(2-thienyl)-2,3-dihydrobenzo[b]furan (5f): Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl 2-thiophencarboxylate (0.156 g, 1 mmol) as electrophile and purification by column chromatography (elucent: hexane/EtOAc, 5/1) on silica gel, gave 5f (0.191 g, 65%) as a colorless oil: \( R_f \) 0.67 (hexane/EtOAc, 3/1). Isolated as a (2.5:1, trans:cis) mixture of diastereoisomers; \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \): 7.50-7.00 (m, ArH), 6.73-6.66 (m, 1H), 6.32-6.27 (m, 1H), 5.8 (s, 1H, cis), 5.74 (s, 1H, trans), 3.34 (s, OH, trans), 2.43 (s, OH, cis); \(^{13}\)C NMR (75.4 MHz, CDCl\(_3\)) \( \delta \): 160.2 (C), 159.5 (C), 147.2 (C), 145.1 (C), 136.6 (C), 133.4 (C), 131.9 (C), 131.3 (CH), 131.1 (CH), 131.0 (C), 128.9 (CH), 128.4 (CH), 127.9 (CH), 127.7 (CH), 127.3 (CH), 127.2 (CH), 126.31 (CH), 126.27 (CH), 126.2 (CH), 125.9 (CH), 125.6 (CH), 125.3 (CH), 125.21 (CH), 125.17 (CH), 121.9 (CH), 121.8 (CH), 110.8 (CH), 110.7 (CH), 95.5 (CH), 94.9 (CH), 85.6 (C), 81.6 (C); EI-LRMS \( m/z \): 276 (M\(^+\), 100). HRMS calcd. for C\(_{18}\)H\(_{14}\)O\(_2\)S: 294.0714. Found: 294.0706. HPLC (hexane/2-PrOH, 99.4/0.6): \( t_R \) = 4.33 min, 5.36 min.

3,5-Dimethyl-3-hydroxy-2-phenyl-2,3-dihydrobenzo[b]furan (5g): Treatment of 1b (0.277 g, 1 mmol) according to the typical procedure, using \( t \)-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (elucent: hexane/EtOAc, 5/1) on silica gel, gave cis-5g (0.046 g, 19%) and trans-5g (0.103 g, 43%).

Data for cis-5g: Colorless oil; \( R_f \) 0.63 (hexane/EtOAc, 2/1); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \): 7.50-7.33 (m, 5H), 7.19 (d, \( J = 1.2 \) Hz, 1H), 7.12 (dd, \( J = 8.3, 1.2 \) Hz, 1H), 6.84 (d, \( J = 8.3 \) Hz, 1H), 5.31 (s, 1H), 2.36 (s, 3H), 1.72 (s, 3H), 1.4 (s, OH); \(^{13}\)C NMR (75.4 MHz, CDCl\(_3\)) \( \delta \): 157.3 (C), 135.0 (C), 131.9 (C), 130.9 (CH), 128.8 (CH), 128.6 (CH), 127.1 (CH), 124.3 (CH), 110.3 (CH), 93.1 (CH), 78.4 (C), 25.2 (CH\(_3\)), 21.0 (CH\(_3\)); EI-LRMS \( m/z \): 240 (M\(^+\), 57), 91 (100). HRMS calcd. for C\(_{18}\)H\(_{16}\)O\(_2\): 240.1150. Found: 240.1158. HPLC (hexane/2-PrOH, 99.4/0.6): \( t_R \) = 4.60 min.

Data for trans-5g: Colorless oil; \( R_f \) 0.55 (hexane/EtOAc, 2/1); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \): 7.40-7.25 (m, 5H), 7.15-7.05 (m, 2H), 6.90-6.85 (m, 1H), 5.48 (s, 1H), 2.68 (br s, OH), 2.34 (s, 3H), 1.10 (s, 3H); \(^{13}\)C NMR (75.4 MHz, CDCl\(_3\)) \( \delta \): 157.0 (C), 137.5 (C), 132.4 (C), 130.89 (CH), 130.86 (CH), 128.4
5-Chloro-3-hydroxy-3-(2-methylpropyl)-2-phenyl-2,3-dihydrobenzo[b]furan (5h): Treatment of 1c (0.297 g, 1 mmol) according to the typical procedure, using ethyl isovalerate (0.130 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 5/1) on silica gel, gave 5h (0.160 g, 53%) as a colorless oil: $R_f$ 0.42 (hexane/EtOAc, 3/1). Isolated as a (5:1, trans:cis) mixture of diastereoisomers. Data for the trans-diastereoisomer: $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.50-6.84 (m, 7H), 6.88 (d, $J = 8.5$ Hz, 1H), 5.44 (s, 1H), 2.42 (s, OH), 1.72-1.58 (m, 1H), 1.42 (dd, $J = 14.4$, 4.0 Hz, 1H), 1.06 (dd, $J = 14.4$, 7.6 Hz, 1H), 0.75 (d, $J = 6.3$ Hz, 3H), 0.67 (d, $J = 6.3$ Hz, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 157.5 (C), 135.9 (C), 134.1 (C), 129.9 (CH), 128.7 (CH), 128.4 (CH), 127.1 (C), 126.3 (CH), 126.0 (C), 112.0 (CH), 96.0 (CH), 84.2 (C), 44.9 (CH$_2$), 25.0 (CH), 23.9 (CH$_3$), 23.5 (CH$_3$); EI-LRMS: m/z 302 (M$^+$, 16), 91 (100). HRMS calcd. for C$_{18}$H$_{19}$ClO$_2$: 302.1074. Found: 302.1062.

5-Chloro-2,3-diphenyl-3-hydroxy-2,3-dihydrobenzo[b]furan (5i): Treatment of 1c (0.297 g, 1 mmol) according to the typical procedure, using ethyl benzoate (0.150 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/EtOAc, 5/1) on silica gel, gave cis-5i (0.103 g, 32%) and trans-5i (0.074 g, 23%).

Data for cis-5i: Colorless oil; $R_f$ 0.31 (hexane/EtOAc, 5/1); $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.46-7.34 (m, 8H), 7.31 (dd, $J = 8.5$, 2.2 Hz, 1H), 7.24-7.16 (m, 2H), 7.06 (d, $J = 2.2$ Hz, 1H), 7.02 (d, $J = 8.5$ Hz, 1H), 5.72 (s, 1H), 2.05 (br s, OH); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 158.7 (C), 142.0 (C), 134.5 (C), 133.3 (C), 130.6 (CH), 129.0 (CH), 128.6 (CH), 128.5 (CH), 128.0 (CH), 126.9 (CH), 126.6 (C), 125.6 (CH), 111.9 (CH), 95.8 (CH), 83.0 (C); EI-LRMS m/z 322 (M$^+$, 67), 91 (100). HRMS calcd. for C$_{20}$H$_{15}$ClO$_2$: 322.0761. Found: 322.0765.

Data for trans-5i: Colorless oil; $R_f$ 0.19 (hexane/EtOAc, 5/1); $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.35 (dd, $J = 8.6$, 2.2 Hz, 1H), 7.12 (d, $J = 2.2$ Hz, 1H), 7.08-7.00 (m, 7H), 6.96-6.87 (m, 4H), 5.77 (s, 1H), 2.87 (s, OH); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 159.2 (C), 139.8 (C), 136.4 (C), 133.9 (C), 130.8 (CH),...
127.79 (CH), 127.76 (CH), 127.6 (CH), 127.0 (CH), 126.6 (C), 126.2 (CH), 125.3 (CH), 111.9 (CH), 96.7 (CH), 87.0 (C); EI-LRMS $m/z$ 322 (M$^+$, 63), 91 (100). HRMS calcd. for C$_{20}$H$_{15}$ClO$_2$: 322.0761. Found: 322.0774. HPLC (hexane/2-PrOH, 99.4/0.6): $t_R = 7.98$ min.

**Typical Procedure for the Synthesis of 2-Aryl-3-substituted Benzo[b]furans 6, Naphtho[2,1-b]furans 8 and Naphtho[1,2-b]furans 9.** The procedure was the same as for the preparation of dihydrobenzofuranols 5 but after the addition of the organic carboxylate at low temperature and further evolution to room temperature, conc. HCl was added and the mixture was stirred at room temperature until complete dehydration (TLC and GC-MS analysis) of the intermediates 5. The crude product was purified by column chromatography (eluent: hexane/EtOAc) on silica gel to afford compounds 6 and 8,9. Alternatively, after the addition of the ester and evolution to room temperature, the mixture was quenched with water, extracted and the residue was dissolved in CH$_2$Cl$_2$ (2 mL). InCl$_3$ (5 mol%) was added and the resulting mixture was stirred at room temperature until consumption of the intermediate alcohols 5 (TLC and GC-MS analysis). The crude was purified by column chromatography on silica gel.

**3-Methyl-2-phenylbenzo[b]furan (6a)**: Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using t-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6a (0.121 g, 58%) as a colorless oil (lit.$^5$ mp 35-36 °C): $R_f$ 0.40 (hexane/EtOAc, 50/1); $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.93-7.88 (m, 2H), 7.64-7.52 (m, 4H), 7.46-7.30 (m, 3H), 2.55 (s, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 153.9 (C), 150.8 (C), 131.5 (C), 131.3 (C), 128.7 (CH), 128.0 (CH), 126.8 (CH), 124.4 (CH), 122.4 (CH), 119.4 (CH), 111.4 (C), 111.0 (CH), 9.6 (CH$_3$); EI-LRMS $m/z$ 208 (M$^+$, 100), 178 (23). HRMS calcd. for C$_{15}$H$_{12}$O: 208.0888. Found: 208.0884. HPLC (hexane): $t_R = 6.45$ min.

**2-Phenyl-3-propylbenzo[b]furan (6b)**: Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl butyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6b (0.172 g, 73%) as a colorless oil: $R_f$ 0.40 (hexane/EtOAc, 50/1); $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.90-7.82 (m, 2H), 7.66-7.60 (m, 1H), 7.56-7.49
(m, 3H), 7.46-7.39 (m, 1H), 7.39-7.25 (m, 2H), 2.97 (t, \( J = 7.8 \text{ Hz}, 2\text{H} \)), 1.92-1.80 (m, 2H), 1.12 (t, \( J = 7.2 \text{ Hz}, 3\text{H} \)); \(^{13}\text{C} \text{ NMR (75.4 MHz, CDCl}_3 \)) \( \delta \) 154.0 (C), 150.8 (C), 131.6 (C), 130.8 (C), 128.8 (CH), 128.1 (CH), 127.0 (CH), 124.4 (CH), 122.4 (CH), 119.8 (CH), 116.5 (C), 111.2 (CH), 26.4 (CH\(_2\)), 23.2 (CH\(_2\)), 14.5 (CH\(_3\)); EI-LRMS \( m/z \) 236 (M\(^+\), 57), 207 (100). HRMS calcd. for C\(_{17}\)H\(_{16}\)O: 236.1201. Found: 236.1192. HPLC (hexane): \( t_R \) = 6.03 min.

**3-Isopropyl-2-phenylbenzo[b]furan (6c):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6c (0.168 g, 71%) as a white solid: mp 63-65 °C; \(^1\text{H} \text{ NMR (300 MHz, CDCl}_3 \)) \( \delta \) 7.88-7.83 (m, 1H), 7.83-7.77 (m, 2H), 7.64-7.52 (m, 3H), 7.50-7.43 (m, 1H), 7.42-7.28 (m, 2H), 3.59 (sept., \( J = 7.1 \text{ Hz}, 1\text{H} \)), 1.59 (d, \( J = 7.1 \text{ Hz}, 6\text{H} \)); \(^{13}\text{C} \text{ NMR (75.4 MHz, CDCl}_3 \)) \( \delta \) 154.6 (C), 150.1 (C), 131.5 (C), 128.68 (CH), 128.65 (C), 128.4 (CH), 128.1 (CH), 124.0 (CH), 122.1 (CH), 121.8 (C), 121.5 (CH), 111.5 (CH), 25.7 (CH), 22.5 (CH\(_3\)); EI-LRMS \( m/z \) 236 (M\(^+\), 54), 221 (100). HRMS calcd. for C\(_{17}\)H\(_{16}\)O: 236.1201. Found: 236.1208. Anal. Calcd. for C\(_{17}\)H\(_{16}\)O: C, 86.40; H, 6.82. Found: C, 86.17; H, 6.81.

**3-(2-Methylpropyl)-2-phenylbenzo[b]furan (6d):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl isovalerate (0.130 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6d (0.115 g, 46%) as a colorless oil: \( R_f \) 0.51 (hexane/EtOAc, 50/1); \(^1\text{H} \text{ NMR (300 MHz, CDCl}_3 \)) \( \delta \) 7.92-7.85 (m, 2H), 7.65-7.59 (m, 1H), 7.58-7.48 (m, 3H), 7.45-7.37 (m, 1H), 7.37-7.25 (m, 2H), 2.87 (d, \( J = 7.1 \text{ Hz}, 2\text{H} \)), 2.2-2.30 (m, 1H), 1.06 (d, \( J = 6.7 \text{ Hz}, 6\text{H} \)); \(^{13}\text{C} \text{ NMR (75.4 MHz, CDCl}_3 \)) \( \delta \) 153.9 (C), 151.2 (C), 131.7 (C), 131.1 (C), 128.7 (CH), 128.1 (CH), 127.0 (CH), 124.3 (CH), 122.4 (CH), 120.2 (CH), 115.9 (C), 111.1 (CH), 33.4 (CH\(_2\)), 29.3 (CH), 23.0 (CH\(_3\)); EI-LRMS \( m/z \) 250 (M\(^+\), 42), 207 (100). HRMS calcd. for C\(_{18}\)H\(_{18}\)O: 250.1358. Found: 250.1346. HPLC (hexane): \( t_R \) = 5.82 min.

**3-Cyclopropyl-2-phenylbenzo[b]furan (6e):** Treatment of 1a (0.310 g, 1 mmol) according to the typical procedure, using ethyl cyclopropanecarboxylate (0.114 g, 1 mmol) as electrophile and
purification by column chromatography (eluent: hexane) on silica gel, gave $6e$ (0.150 g, 64%) as a white solid: mp 34-36 °C; $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 8.26-8.20 (m, 2H), 7.92-7.86 (m, 1H), 7.70-7.61 (m, 3H), 7.56-7.50 (m, 1H), 7.49-7.38 (m, 2H), 2.24-2.10 (m, 1H), 1.27-1.16 (m, 2H), 0.93-0.83 (m, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 153.8 (C), 152.6 (C), 131.0 (C), 130.9 (C), 128.4 (CH), 128.0 (CH), 127.1 (CH), 124.4 (CH), 122.5 (CH), 120.2 (CH), 116.8 (C), 111.1 (CH), 7.0 (CH$_2$), 5.9 (CH); Ei-LRMS $m/z$ 234 (M$^+$, 100). HRMS calcd. for C$_{17}$H$_{14}$O: 234.1045. Found: 234.1040. Anal. Calcd. for C$_{17}$H$_{14}$O: C, 87.15; H, 6.02. Found: C, 87.00; H, 6.04.

2-Phenyl-3-(2-thienyl)benzo[b]furan ($6f$): Treatment of $1a$ (0.310 g, 1 mmol) according to the typical procedure, using ethyl 2-thiophenecarboxylate (0.156 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave $6f$ (0.149 g, 54%) as a white solid: mp 81-83 °C; $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.82-7.74 (m, 2H), 7.64 (dd, $J$ = 7.7, 1.4 Hz, 1H), 7.57 (dd, $J$ = 8.0, 0.8 Hz, 1H), 7.45 (dd, $J$ = 5.0, 1.1 Hz, 1H), 7.43-7.33 (m, 4H), 7.33-7.26 (m, 1H), 7.24-7.16 (m, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 153.9 (C), 151.8 (C), 133.4 (C), 130.4 (C), 130.3 (C), 128.9 (CH), 128.6 (CH), 127.8 (CH), 127.6 (CH), 127.4 (CH), 126.3 (CH), 125.0 (CH), 123.3 (CH), 120.3 (CH), 111.2 (CH), 110.8 (C); Ei-LRMS $m/z$ 276 (M$^+$, 100). HRMS calcd. for C$_{18}$H$_{12}$OS: 276.0609. Found: 276.0617. HPLC (hexane): $t_R$ = 7.63 min.

3,5-Dimethyl-2-phenylbenzo[b]furan ($6g$): Treatment of $1b$ (0.277 g, 1 mmol) according to the typical procedure, using t-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave $6g$ (0.118 g, 53%) as a white solid: mp 69-71 °C (lit. $^7$ mp 69.5-70 °C); $^1$H NMR (300 MHz, CDCl$_3$) $\delta$ 7.94-7.88 (m, 2H), 7.60-7.53 (m, 2H), 7.50-7.44 (m, 2H), 7.41 (s, 1H), 7.20 (d, $J$ = 8.4 Hz, 1H), 2.58 (s, 3H), 2.54 (s, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) $\delta$ 152.3 (C), 150.8 (C), 131.8 (C), 131.7 (C), 131.3 (C), 128.7 (CH), 127.8 (CH), 126.7 (CH), 125.7 (CH), 119.2 (CH), 111.2 (C), 110.5 (CH), 21.5 (CH$_3$), 9.6 (CH$_3$); Ei-LRMS: $m/z$ 222 (M$^+$, 100). HRMS calcd. for C$_{16}$H$_{14}$O: 222.1045. Found: 222.1036. Anal. Calcd. for C$_{16}$H$_{14}$O: C, 86.45; H, 6.35. Found: C, 86.62; H, 6.33.
3-Cyclopropyl-5-methyl-2-phenylbenzo[b]furan (6h): Treatment of 1b (0.277 g, 1 mmol) according to the typical procedure, using ethyl cyclopropanecarboxylate (0.114 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6h (0.112 g, 45%) as a white solid: mp 48-50 ºC; ¹H NMR (300 MHz, CDCl₃) δ 8.15-8.05 (m, 2H), 7.60-7.50 (m, 3H), 7.48-7.40 (m, 2H), 7.17 (dd, J = 8.4, 1.9 Hz, 1H), 2.56 (s, 3H), 2-2.16 (m, 1H), 1.20-1.08 (m, 2H), 0.84-0.72 (m, 2H); ¹³C NMR (75.4 MHz, CDCl₃) δ 152.8 (C), 152.2 (C), 131.8 (C), 131.2 (C), 131.0 (C), 128.4 (CH), 128.0 (CH), 127.1 (CH), 125.5 (CH), 120.1 (CH), 116.6 (C), 110.6 (CH), 21.6 (CH₃), 7.1 (CH₂), 6.0 (CH); EI-LRMS: m/z 248 (M⁺, 100). HRMS calcd. for C₁₈H₁₆O: 248.1201. Found: 248.1192. Anal. Calcd. for C₁₈H₁₆O: C, 87.06; H, 6.49. Found: C, 86.91; H, 6.51.

5-Chloro-3-methyl-2-phenylbenzo[b]furan (6i): Treatment of 1c (0.297 g, 1 mmol) according to the typical procedure, using t-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6i (0.155 g, 64%) as a white solid: mp 78-80 ºC (lit.⁸ mp 80-81 ºC); ¹H NMR (300 MHz, CDCl₃) δ 7.83-7.70 (m, 2H), 7.53-7.45 (m, 3H), 7.42-7.35 (m, 2H), 7.24 (dd, J = 9.0, 2.1 Hz, 1H), 2.44 (s, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 152.2 (C), 132.6 (C), 131.0 (C), 128.8 (CH), 128.3 (CH), 128.1 (C), 126.8 (CH), 124.5 (CH), 119.0 (CH), 112.0 (CH), 111.0 (C), 9.5 (CH₃); EI-LRMS: m/z 242 (M⁺, 100). HRMS calcd. for C₁₅H₁₁ClO: 242.0498. Found: 242.0488. Anal. Calcd. for C₁₅H₁₁ClO: C, 74.23; H, 4.57. Found: C, 74.44; H, 4.56.

5-Chloro-2-phenyl-3-propylbenzo[b]furan (6j): Treatment of 1c (0.297 g, 1 mmol) according to the typical procedure, using ethyl butyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6j (0.165 g, 61%) as a white solid: mp 65-67 ºC; ¹H NMR (300 MHz, CDCl₃) δ 7.85-7.77 (m, 2H), 7.58-7.48 (m, 3H), 7.46-7.38 (m, 2H), 7.27 (dd, J = 8.6, 2.2 Hz, 1H), 2.56 (t, J = 7.6 Hz, 2H), 1.90-1.73 (m, 2H), 1.09 (t, J = 7.5 Hz, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 152.4 (C), 152.2 (C), 132.2 (C), 131.0 (C), 128.8 (CH), 128.5 (CH), 128.0 (C), 127.0 (CH), 124.4 (CH), 119.4 (CH), 116.1 (C), 112.1 (CH), 26.2 (CH₂), 23.0 (CH₂), 14.4 (CH₃); EI-LRMS: m/z 270

3-Isopropyl-2-p-tolybenzo[b]furan (6k): Treatment of 1d (0.324 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6k (0.175 g, 70%) as a white solid: mp 61-63 ºC; ¹H NMR (300 MHz, CDCl₃) δ 7.78 (dd, J = 7.0, 1.3 Hz, 1H), 7.62 (d, J = 8.0 Hz, 2H), 7.52 (dd, J = 7.6, 1.3 Hz, 1H), 7.31 (d, J = 7.6 Hz, 2H), 7.28-7.20 (m, 2H), 3.49 (sept., J = 7.2 Hz, 1H), 2.45 (s, 3H), 1.52 (d, J = 7.2 Hz, 6H); ¹³C NMR (75.4 MHz, CDCl₃) δ 154.5 (C), 150.3 (C), 138.4 (C), 129.4 (CH), 128.73 (C), 128.66 (C), 128.0 (CH), 123.8 (CH), 122.0 (CH), 121.4 (CH), 121.3 (C), 111.4 (CH), 25.7 (CH), 22.5 (CH₃), 21.5 (CH₃); EI-LRMS: m/z 250 (M⁺, 53), 235 (100). HRMS calcd. for C₁₈H₁₈O: 250.1358. Found: 250.1370. Anal. Calcd. for C₁₈H₁₈O: C, 86.36; H, 7.25. Found: C, 86.18; H, 7.27.

3-(2-Thienyl)-2-p-tolybenzo[b]furan (6l): Treatment of 1d (0.324 g, 1 mmol) according to the typical procedure, using ethyl 2-thiophenecarboxylate (0.156 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6l (0.168 g, 58%) as a white solid: mp 73-75 ºC; ¹H NMR (300 MHz, CDCl₃) δ 7.67 (d, J = 8.2 Hz, 2H), 7.63 (dd, J = 7.8, 1.3 Hz, 1H), 7.58 (d, J = 7.8 Hz, 1H), 7.45 (dd, J = 4.9, 1.3 Hz, 1H), 7.35 (td, J = 7.8, 1.3 Hz, 1H), 7.27 (td, J = 7.4, 1.2 Hz, 1H), 7.23-7.15 (m, 4H), 2.39 (s, 3H); ¹³C NMR (75.4 MHz, CDCl₃) δ 153.8 (C), 152.1 (C), 138.9 (C), 133.6 (C), 130.4 (C), 129.3 (CH), 127.7 (CH), 127.5 (C), 127.4 (CH), 127.3 (CH), 126.2 (CH), 124.8 (CH), 123.2 (CH), 120.2 (CH), 111.1 (CH), 110.2 (C), 21.5 (CH₃); EI-LRMS: m/z 290 (M⁺, 100). HRMS calcd. for C₁₉H₁₄OS: 290.0765. Found: 290.0783. HPLC (hexane): tᵣ = 8.03 min.

3-(2-Furyl)-2-p-tolybenzo[b]furan (6m): Treatment of 1d (0.324 g, 1 mmol) according to the typical procedure, using ethyl 2-furoate (0.140 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane) on silica gel, gave 6m (0.164 g, 60%) as a white solid: mp 45-47 ºC; ¹H NMR (300 MHz, CDCl₃) δ 7.91-7.87 (m, 1H), 7.82-7.76 (m, 2H), 7.64-7.58 (m, 2H), 7.44-7.33 (m, 2H), 7.31 (dd, J = 8.0, 0.5 Hz, 2H), 6.72-6.68 (m, 1H), 6.61 (dd, J = 3.3, 3.0 Hz, 1H), 2.5 (s, 3H); ¹³C
NMR (75.4 MHz, CDCl₃) δ 154.0 (C), 152.2 (C), 147.2 (C), 141.9 (CH), 139.2 (C), 129.3 (CH), 128.6 (C), 127.8 (C), 127.6 (CH), 124.8 (CH), 123.2 (CH), 120.9 (CH), 111.4 (CH), 111.2 (CH), 108.6 (CH), 107.6 (C), 21.5 (CH₃); EI-LRMS: m/z 274 (M⁺, 100). HRMS calcd. for C₁₉H₁₄O₂: 274.0994. Found: 274.1002. Anal. Calcd. for C₁₉H₁₄O₂: C, 83.19; H, 5.14. Found: C, 83.45; H, 5.12.

3-Isopropyl-2-(1-naphthyl)benzo[b]furan (6n): Treatment of 1e (0.360 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluient: hexane) on silica gel, gave 6n (0.200 g, 70%) as a white solid: mp 96-98 ºC; ¹H NMR (300 MHz, CDCl₃) δ 8.10-8.00 (m, 3H), 7.98-7.93 (m, 1H), 7.77-7.65 (m, 3H), 7.65-7.59 (m, 2H), 7.50-7.39 (m, 2H), 3.24 (sept., J = 7.1 Hz, 1H), 1.55 (d, J = 7.1 Hz, 6H); ¹³C NMR (75.4 MHz, CDCl₃) δ 155.1 (C), 149.9 (C), 133.8 (C), 132.8 (C), 129.8 (CH), 129.1 (CH), 128.8 (C), 128.4 (CH), 128.2 (C), 126.7 (CH), 126.3 (CH), 126.2 (CH), 125.2 (CH), 124.1 (CH), 123.9 (C), 122.3 (CH), 121.2 (CH), 111.7 (CH), 25.8 (CH), 22.6 (CH₃); EI-LRMS m/z 286 (M⁺, 78), 271 (100). HRMS calcd. for C₂₁H₁₈O: 286.1358. Found: 286.1339. Anal. Calcd. for C₂₁H₁₈O: C, 88.08; H, 6.34. Found: C, 87.85; H, 6.32.

2-(2-Fluorophenyl)-3-isopropylbenzo[b]furan (6o): Treatment of 1f (0.281 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluient: hexane) on silica gel, gave 6o (0.089 g, 35%) as a colorless oil: Rf 0.20 (hexane); ¹H NMR (300 MHz, CDCl₃) δ 7.80 (d, J = 7.8 Hz, 1H), 7.59 (td, J = 7.4, 1.6 Hz, 1H), 7.54 (d, J = 7.9 Hz, 1H), 7.47-7.39 (m, 1H), 7.37-7.17 (m, 4H), 3.19 (sept., J = 7.2 Hz, 1H), 1.46 (d, J = 7.2 Hz, 6H); ¹³C NMR (75.4 MHz, CDCl₃) δ 160.0 (d, J = 248.0 Hz, C), 155.3 (C), 144.8 (C), 131.6 (d, J = 2.4 Hz, CH), 130.8 (d, J = 8.1 Hz, CH), 128.1 (C), 124.3 (CH), 124.26 (d, J = 3.5 Hz, CH), 122.2 (CH), 121.5 (CH), 119.4 (d, J = 15.0 Hz, C), 116.3 (d, J = 23.0 Hz, CH), 111.6 (CH), 26.0 (d, J = 2.4 Hz, CH), 22.3 (CH₃); EI-LRMS m/z 254 (M⁺, 100). HRMS calcd. for C₁₇H₁₅FO: 254.1107. Found: 254.1118. HPLC (hexane): t_R = 7.04 min.
3-(2-Furyl)-2-(2-methoxyphenyl)benzo[b]furan (6p): Treatment of 1g (0.340 g, 1 mmol) according to the typical procedure, using ethyl 2-furoate (0.140 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/AcOEt, 20/1) on silica gel, gave 6p (0.136 g, 47%) as a colorless oil: \( R_f \) 0.43 (hexane/EtOAc, 5/1); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \) 8.08-8.00 (m, 1H), 7.66-7.54 (m, 2H), 7.40-7.32 (m, 2H), 7.10 (t, \( J = 7.6 \) Hz, 1H), 7.02 (d, \( J = 8.5 \) Hz, 1H), 6.48-6.43 (m, 1H), 6.36 (dt, \( J = 3.3, 0.8 \) Hz, 1H), 3.70 (s, 3H); \(^1^3\)C NMR (75.4 MHz, CDCl\(_3\)) \( \delta \) 157.5 (C), 154.5 (C), 149.2 (C), 148.4 (C), 141.4 (CH), 131.6 (CH), 131.2 (CH), 127.2 (C), 124.6 (CH), 123.1 (CH), 121.3 (CH), 120.6 (CH), 120.1 (C), 111.4 (CH), 111.3 (CH), 111.1 (CH), 110.3 (C), 106.8 (CH), 55.6 (CH\(_3\)); EI-LRMS \textit{m/z} 290 (M\(^+\), 100). HRMS calcd. for C\(_{19}\)H\(_{14}\)O\(_3\): 290.0943. Found: 290.0948. HPLC (hexane): \( t_R = 7.73 \) min.

3-Methyl-2-phenylnaptho[2,1-b]furan (8a): Treatment of 7a (0.313 g, 1 mmol) according to the typical procedure, using \( t \)-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/AcOEt, 50/1) on silica gel, gave 8a (0.147 g, 57%) as a white solid: mp 102-104 \(^\circ\)C (lit.\(^9\) mp 104 \(^\circ\)C); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \) 8.53 (d, \( J = 8.3 \) Hz, 1H), 8.03 (d, \( J = 8.0 \) Hz, 1H), 7.90-7.82 (m, 2H), 7.80-7.70 (m, 2H), 7.66 (td, \( J = 7.7, 1.4 \) Hz, 1H), 7.62-7.52 (m, 3H), 7.50-7.42 (m, 1H), 2.89 (s, 3H); \(^1^3\)C NMR (75.4 MHz, CDCl\(_3\)) \( \delta \) 151.8 (C), 150.9 (C), 131.3 (C), 130.9 (C), 129.20 (C), 129.16 (CH), 128.7 (CH), 127.9 (CH), 127.6 (CH), 126.2 (CH), 125.6 (CH), 124.1 (CH), 123.8 (C), 123.1 (CH), 113.6 (C), 112.4 (CH), 12.5 (CH\(_3\)); EI-LRMS \textit{m/z} 258 (M\(^+\), 100). HRMS calcd. for C\(_{19}\)H\(_{14}\)O: 258.1045. Found: 258.1034. Anal. Calcd. for C\(_{19}\)H\(_{14}\)O: C, 88.34; H, 5.46. Found: C, 88.08; H, 5.44.

2-Phenyl-3-(2-thienyl)naphtho[2,1-b]furan (8b): Treatment of 7a (0.313 g, 1 mmol) according to the typical procedure, using ethyl 2-thiophenecarboxylate (0.156 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/AcOEt, 100/1) on silica gel, gave 8b (0.231 g, 71%) as a white solid: mp 133-135 \(^\circ\)C; \(^1\)H NMR (300 MHz, CDCl\(_3\)) \( \delta \) 8.10-7.95 (m, 1H), 7.84-7.72 (m, 5H), 7.66 (dd, \( J = 5.0, 1.4\)Hz, 1H), 7.49 (td, \( J = 7.5, 1.4 \) Hz, 1H), 7.46-7.39 (m, 2H), 7.39-7.35 (m, 2H),
7.35-7.31 (m, 2H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 152.0 (C), 151.4 (C), 134.9 (C), 131.0 (C), 130.5 (C), 129.0 (CH), 128.9 (CH), 128.6 (CH), 128.34 (CH), 128.27 (CH), 128.2 (C), 127.8 (CH), 126.4 (CH), 126.32 (CH), 126.29 (CH), 124.6 (CH), 124.1 (C), 123.0 (CH), 112.2 (CH), 111.7 (C); EI-LRMS: m/z 326 (M$^+$, 100). HRMS calcd. for C$_{22}$H$_{14}$OS: 326.0765. Found: 326.0753. HPLC (hexane): $t_R = 9.61$ min.

3-Methyl-2-phenylnaphtho[1,2-b]furan (9a): Treatment of 7b (0.313 g, 1 mmol) according to the typical procedure, using $t$-butyl acetate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/AcOEt, 50/1) on silica gel, gave 9a (0.144 g, 56%) as a white solid: mp 118-120 ºC (lit. $^9$ mp 118 ºC); $^1$H NMR (300 MHz, CDCl$_3$) δ 8.42 (d, $J = 8.3$ Hz, 1H), 8.0-7.9 (m, 3H), 7.76-7.60 (m, 3H), 7.60-7.48 (m, 3H), 7.45-7.37 (m, 1H), 2.60 (s, 3H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 150.3 (C), 149.3 (C), 131.8 (C), 131.7 (C), 128.8 (CH), 128.5 (CH), 127.6 (CH), 126.5 (CH), 126.3 (CH), 125.0 (CH), 123.1 (CH), 121.3 (C), 120.3 (CH), 118.1 (CH), 112.6 (C), 9.8 (CH$_3$); EI-LRMS: m/z 258 (M$^+$, 100). HRMS calcd. for C$_{19}$H$_{14}$O: 258.1045. Found: 258.1034. Anal. Calcd. for C$_{19}$H$_{14}$O: C, 88.34; H, 5.46. Found: C, 88.17; H, 5.45.

3-Isopropyl-2-phenylnaphtho[1,2-b]furan (9b): Treatment of 7b (0.313 g, 1 mmol) according to the typical procedure, using ethyl isobutyrate (0.116 g, 1 mmol) as electrophile and purification by column chromatography (eluent: hexane/AcOEt, 100/1) on silica gel, gave 9b (0.180 g, 63%) as a white solid: mp 119-121 ºC; $^1$H NMR (300 MHz, CDCl$_3$) δ 8.45 (d, $J = 8.3$ Hz, 1H), 7.99 (d, $J = 7.8$ Hz, 1H), 7.91 (d, $J = 8.6$ Hz, 1H), 7.88-7.82 (m, 2H), 7.66 (d, $J = 8.6$ Hz, 1H), 7.68-7.62 (m, 1H), 7.62-7.51 (m, 3H), 7.50-7.43 (m, 1H), 3.63 (sept., $J = 7.0$ Hz, 1H), 1.61 (d, $J = 7.0$ Hz, 6H); $^{13}$C NMR (75.4 MHz, CDCl$_3$) δ 150.2 (C), 149.6 (C), 131.7 (C), 131.2 (C), 128.7 (C), 128.3 (CH), 128.1 (CH), 128.0 (CH), 126.3 (CH), 125.2 (CH), 124.1 (CH), 123.3 (C), 122.7 (CH), 121.6 (C), 120.3 (CH), 120.1 (CH), 25.8 (CH), 22.8 (CH$_3$); EI-LRMS: m/z 286 (M$^+$, 48), 271 (100). HRMS calcd. for C$_{21}$H$_{18}$O: 286.1358. Found: 286.1344. Anal. Calcd. for C$_{21}$H$_{18}$O: C, 88.08; H, 6.34. Found: C, 87.79; H, 6.35.
**Table**: Comparative $^1$H-NMR data for some of the dihydrobenzofuranols 5 showing the anisotropic effect of the C2-phenyl group for the C3-substituent

<table>
<thead>
<tr>
<th></th>
<th>trans-5</th>
<th>cis-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a (R = Me, $R^1 = H$)</td>
<td>$\delta$ (OH) 2.85 ppm</td>
<td>$\delta$ (OH) 1.70 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (Me) 1.10 ppm</td>
<td>$\delta$ (Me) 1.73 ppm</td>
</tr>
<tr>
<td>5c (R = $i$-Pr, $R^1 = H$)</td>
<td>$\delta$ (OH) 2.45 ppm</td>
<td>$\delta$ (OH) 1.46 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (CH) 1.81 ppm</td>
<td>$\delta$ (CH) 2.26 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (Me) 0.97 ppm</td>
<td>$\delta$ (Me) 1.08 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (Me) 0.42 ppm</td>
<td>$\delta$ (Me) 0.98 ppm</td>
</tr>
<tr>
<td>5e (R = $t$-Bu, $R^1 = H$)</td>
<td>$\delta$ (OH) 2.34 ppm</td>
<td>$\delta$ (OH) 1.37 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (Me$_3$) 0.74 ppm</td>
<td>$\delta$ (Me$_3$) 1.15 ppm</td>
</tr>
<tr>
<td>5f (R = 2-Th, $R^1 = H$)</td>
<td>$\delta$ (OH) 3.34 ppm</td>
<td>$\delta$ (OH) 2.43 ppm</td>
</tr>
<tr>
<td>5g (R = Me, $R^1 = Me$)</td>
<td>$\delta$ (OH) 2.68 ppm</td>
<td>$\delta$ (OH) 1.40 ppm</td>
</tr>
<tr>
<td></td>
<td>$\delta$ (Me) 1.10 ppm</td>
<td>$\delta$ (Me) 1.72 ppm</td>
</tr>
<tr>
<td>5i (R = Ph, $R^1 = Cl$)</td>
<td>$\delta$ (OH) 2.87 ppm</td>
<td>$\delta$ (OH) 2.05 ppm</td>
</tr>
</tbody>
</table>

*aThe data for the *cis* isomer were collected from ref.[3].
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$\text{H-NMR:}$

$\text{13C-NMR:}$
$^{1}H$-NMR:

$^{13}C$-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$\text{\textsuperscript{1}H-NMR:}$

$\text{\textsuperscript{13}C-NMR:}$
\[ ^1\text{H-NMR:} \]

\[ ^{13}\text{C-NMR:} \]
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^{1}H$-NMR:

(trans-5e)

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

(trans-5g)

$^{13}$C-NMR:
$^{1}H$-NMR:

$^{13}C$-NMR:
$^{1}H$-NMR:

$^{13}C$-NMR:
$^{1}H$-NMR:

$^{13}C$-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
\(^1\text{H-NMR:}\)

\(^{13}\text{C-NMR:}\)
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^{1}H$-NMR:

$^{13}C$-NMR:
\begin{align*}
1^1\text{H-NMR:} \\
1^3\text{C-NMR:}
\end{align*}
$^{1}H$-NMR:

$^{13}C$-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^{1}H$-NMR:

$^{13}C$-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
\[ ^1H-\text{NMR:} \]

\[ ^{13}C-\text{NMR:} \]
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
$^1$H-NMR:

$^{13}$C-NMR:
Pulse Sequence: NOESY

Solvent: CDCl3
Ambient temperature
File: DL063-N0ESY
INDIA-400 "carbono"

Relax. delay 1.000 sec
Mixing 0.500 sec
Acq. time 0.209 sec
Width 4686.4 Hz
2D Width 4686.4 Hz
8 repetitions
2 x 200 increments
OBSERVE H1, 999.938071 MHz
DATA PROCESSING
Gauss apodization 0.097 sec
F1 DATA PROCESSING
Gauss apodization 0.038 sec
FT size 2048 x 2048
Total time 1 hr, 33 min, 53 sec
REFERENCES.


