Supplementary Information

PhI(OAc)$_2$ mediated decarboxylative sulfonylation of β-aryl-α,β-unsaturated carboxylic acids:

A synthesis of (E)-vinyl sulfones

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General information

All isolated compounds were characterized on the basis of $^1$H NMR and $^{13}$C NMR spectroscopic data, IR spectra, and HRMS data. $^1$H NMR and $^{13}$C NMR spectra were recorded on a Bruker AscendTM spectrometer. $^1$H NMR and $^{13}$C NMR chemical shifts are reported in ppm using tetramethylsilane (TMS) as an internal standard or residual nondeuterated solvent peak as an internal standard. Infrared spectra were recorded with a Bruker ALPHA FT-IR spectrometer. High-resolution mass spectra (HRMS) were recorded with a Bruker micro TOF spectrometer in the ESI mode. Melting points were recorded with a Sanyo Gallenkamp apparatus. Reactions were monitored by thin-layer chromatography and visualized by UV and a solution of KMnO$_4$. Cinnamic acids 1a, 1g, 1j, 1k, 1n, 1q and solvents were obtained from commercial sources and used without further purification. Unless otherwise noted, α,β-unsaturated carboxylic acid were synthesized according to literature procedures via Wittig reaction and Horner-Wadsworth-Emmons reaction. Purification of the reaction products was carried out by column chromatography on silica gel (0.063–0.200 mm). After column chromatography, analytically pure solid was obtained by crystallization from CH$_2$Cl$_2$–hexanes.

General procedures: Synthesis of vinyl sulfone from β-aryl-α,β-unsaturated carboxylic acid and sodium sulfinate. DIB (161.1 mg, 0.50 mmol) was added to a solution of β-aryl-α,β-unsaturated carboxylic acid (0.25 mmol) and sodium sulfinate (1.0 mmol) in DMF (3 mL) at room temperature and then reaction mixture was stirred at 100 ºC under air for 10-30 minutes. After completion of the reaction, the reaction was cooled to room temperature and was diluted with water (10 mL). Further stirring was followed by extraction with EtOAc (2 × 20 mL). The combined organic extracts were washed with H$_2$O (20 mL) and brine (20 mL), dried (MgSO$_4$), filtered, and concentrated (aspirator). The residue was purified by column chromatography using EtOAc–hexanes as eluent to afford the corresponding product.
$^1$H and $^{13}$C NMR spectra

$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^1$C NMR (100 MHz, CDCl$_3$)
**$^1$H NMR (400 MHz, CDCl$_3$)**

![NMR Spectrum](image)

**$^{13}$C NMR (100 MHz, CDCl$_3$)**

![NMR Spectrum](image)
\(^1\)H NMR (400 MHz, acetone-\(d_6\))

\(^{13}\)C NMR (100 MHz, acetone-\(d_6\))
1H NMR (400 MHz, CDCl₃)

13C NMR (100 MHz, CDCl₃)
**$^{1}H$ NMR (400 MHz, CDCl$_3$)**

**$^{13}C$ NMR (100 MHz, CDCl$_3$)**
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$\text{H NMR (400 MHz, CDCl}_3$)

$\text{^13C NMR (100 MHz, CDCl}_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
**1H NMR (400 MHz, CDCl₃)**

![1H NMR Spectrogram](image)

**13C NMR (100 MHz, CDCl₃)**

![13C NMR Spectrogram](image)
$^{1}$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}$$^H$ NMR (400 MHz, CDCl$_3$)

$^{13}$$^C$ NMR (100 MHz, CDCl$_3$)
$^{1}$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
\[ \text{1H NMR (400 MHz, CDCl}_3\text{)} \]

\[ \text{13C NMR (100 MHz, CDCl}_3\text{)} \]
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}H$ NMR (400 MHz, CDCl$_3$)

$^{13}C$ NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}H$ NMR (400 MHz, CDCl$_3$)

$^{13}C$ NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$3\text{za}$

$^1\text{H NMR (400 MHz, CDCl}_3\text{)}$

$^13\text{C NMR (100 MHz, CDCl}_3\text{)}$
$^{1}$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^1$H NMR (400 MHz, CDCl$_3$)

$^{13}$C NMR (100 MHz, CDCl$_3$)
3ab

$^1$H NMR (400 MHz, CDCl$_3$)

3ab

$^{13}$C NMR (100 MHz, CDCl$_3$)
$^{1}H$ NMR (400 MHz, CDCl$_3$)

$^{13}C$ NMR (100 MHz, CDCl$_3$)
$^{1}{\text{H}} \text{ NMR (400 MHz, CDCl}_3\text{)}$

$^{13}{\text{C}} \text{ NMR (100 MHz, CDCl}_3\text{)}$