Supporting Information

Silver-mediated three-component cycloaddition reaction for direct synthesis of 1-N-vinyl-substituted 1,2,3-triazoles

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Substrates employed for the reaction

\[
\begin{array}{cccc}
\text{Ph} & \text{C} & \text{H}_3 & \text{CO} \\
1a & 1b & 1c & 1d \\
F_3C & H_3CO & Br & F \\
1e & 1f & 1g & 1h \\
Cl & Cl & Cl & Cl \\
1i & 1j & 1k & \\
\end{array}
\]

**Scheme S1.** Phenylacetylenes employed for the synthesis of 1-N-vinyl-1,2,3-triazoles.

\[
\begin{array}{cccc}
\text{Ph} & \text{CO} & \text{CO} & \text{NH} \\
3a & 3b & 3c & 3d \\
\text{Cl} & \text{Cl} & \text{Cl} & \text{OMe} \\
3e & 3f & 3g & 3h \\
\text{H} & \text{H} & \text{H} & \\
3i & 3j & 3k & 3l \\
\end{array}
\]

**Scheme S2.** 1,3-Dicarbonyls employed for the synthesis of 1-N-vinyl-1,2,3-triazoles.

**Single Crystal X-ray Diffraction of 4aa’**

White block-like single crystals of 4aa’ were grown by layering a dichloromethane solution with n-hexane at ambient temperature. X-Ray diffraction data of one these crystals were collected on a Bruker SMART. The measurements were performed with Mo-Kα radiation (λ = 0.71073 Å). Data were collected at 296 (2) K, using the phi and
omega scans to a maximum $\theta$ value of 25.027°. The data were refined by full-matrix least-squares techniques on $F^2$ with SHELXL-2014. And the structures were solved by direct methods SHELXL-2014. All the non-hydrogen atoms were refined anisotropically. The hydrogen atoms were included at geometrically idealized positions. An ORTEP representation of the structure is shown below.

![ORTEP drawing of 4aa'](image)

**Figure S1.** ORTEP drawing of 4aa' with the numbering scheme

**Table S5.** Crystal data and structure refinement for 4aa'

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification code</td>
<td>4aa'</td>
</tr>
<tr>
<td>Empirical formula</td>
<td>C$<em>{18}$H$</em>{15}$N$_3$O</td>
</tr>
<tr>
<td>Formula weight</td>
<td>289.33</td>
</tr>
<tr>
<td>Temperature</td>
<td>296 (2) K</td>
</tr>
<tr>
<td>Wavelength</td>
<td>0.71073 Å</td>
</tr>
<tr>
<td>Crystal system</td>
<td>Triclinic</td>
</tr>
<tr>
<td>Space group</td>
<td>P-1</td>
</tr>
<tr>
<td>Unit cell dimensions</td>
<td></td>
</tr>
<tr>
<td>$a$</td>
<td>9.405(7) Å</td>
</tr>
<tr>
<td>$b$</td>
<td>9.471(7) Å</td>
</tr>
<tr>
<td>$c$</td>
<td>9.815(7) Å</td>
</tr>
<tr>
<td>$a$</td>
<td>84.218(8)°.</td>
</tr>
<tr>
<td>$b$</td>
<td>63.798(7)°.</td>
</tr>
<tr>
<td>$c$</td>
<td>78.437(8)°.</td>
</tr>
<tr>
<td>Volume</td>
<td>768.5(10) Å$^3$</td>
</tr>
<tr>
<td>$Z$</td>
<td>2</td>
</tr>
<tr>
<td>Density (calculated)</td>
<td>1.250 Mg/m$^3$</td>
</tr>
<tr>
<td>Absorption coefficient</td>
<td>0.080 mm$^{-1}$</td>
</tr>
<tr>
<td>$F(000)$</td>
<td>304</td>
</tr>
<tr>
<td>Crystal size</td>
<td>0.21 x 0.2 x 0.19 mm$^3$</td>
</tr>
<tr>
<td>Theta range for data collection</td>
<td>2.992 to 25.027°.</td>
</tr>
<tr>
<td>Index ranges</td>
<td>-11&lt;=$h$&lt;=$11$, -11&lt;=$k$&lt;=$11$, -11&lt;=$l$&lt;=$11$</td>
</tr>
<tr>
<td>Reflections collected</td>
<td>7291</td>
</tr>
</tbody>
</table>
NMR spectra of the obtained compounds

$^1$H-NMR spectrum of 4aa

![$^1$H-NMR spectrum of 4aa](image)

$^{13}$C-NMR spectrum of 4aa

![$^{13}$C-NMR spectrum of 4aa](image)
$^1$H-NMR spectrum of 4aa’

$^{13}$C-NMR spectrum of 4aa’
$^1$H-NMR spectrum of 4ab

$^{13}$C-NMR spectrum of 4ab
$^1$H-NMR spectrum of 4bb

$^{13}$C-NMR spectrum of 4bb
$^1$H-NMR spectrum of 4cb

$^{13}$C-NMR spectrum of 4cb
$^1$H-NMR spectrum of 4db

![H-NMR spectrum of 4db](image)

$^{13}$C-NMR spectrum of 4db

![C-NMR spectrum of 4db](image)
$^1$H-NMR spectrum of 4eb

$^{13}$C-NMR spectrum of 4eb
$^{19}\text{F-NMR spectrum of 4eb}$
$^1$H-NMR spectrum of 4fb

$^{13}$C-NMR spectrum of 4fb
$^{1}H$-NMR spectrum of 4gb

$^{13}C$-NMR spectrum of 4gb
$^{1}$H-NMR spectrum of 4hb

$^{13}$C-NMR spectrum of 4hb
$^{19}$F-NMR spectrum of 4hb
$^1$H-NMR spectrum of 4ib

$^{13}$C-NMR spectrum of 4ib
**$^1$H-NMR spectrum of 4jb**

![H-NMR spectrum of 4jb](image)

**$^{13}$C-NMR spectrum of 4jb**

![C-NMR spectrum of 4jb](image)
$^{1}H$-NMR spectrum of 4kb

$^{13}C$-NMR spectrum of 4kb
$^1$H-NMR spectrum of 4ac

$^{13}$C-NMR spectrum of 4ac
$^1$H-NMR spectrum of 4ad

$^{13}$C-NMR spectrum of 4ad
$^{1}$H-NMR spectrum of 4ae

$^{13}$C-NMR spectrum of 4ae
$^{1}H$-NMR spectrum of 4af

$^{13}C$-NMR spectrum of 4af
$^1$H-NMR spectrum of 4ag

$^{13}$C-NMR spectrum of 4ag
$^1$H-NMR spectrum of 4ah

$^{13}$C-NMR spectrum of 4ah
$^1$H-NMR spectrum of 4ai

$^{13}$C-NMR spectrum of 4ai
$^1$H-NMR spectrum of 4ak

$^{13}$C-NMR spectrum of 4ak
$^1$H-NMR spectrum of 4al

$^{13}$C-NMR spectrum of 4al
$^{19}$F-NMR spectrum of 4a1