Time-resolved nanosecond fluorescence lifetime imaging and picosecond infrared spectroscopy of combretastatin A-4 in solution and in cellular systems

Bisby, RH, Botchway, SW, Greetham, GM, Hadfield, JA, Mcgown, A, Parker, AW, Scherer, KM and Towrie, M

http://dx.doi.org/10.1088/0957-0233/23/8/084001

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FIGURE 1

<table>
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<tr>
<th>Compound</th>
<th>R₁</th>
<th>R₂</th>
<th>log(P)</th>
<th>τ (ps)</th>
<th>φ</th>
<th>λ_{max} (ex)</th>
<th>λ_{max} (em)</th>
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<tbody>
<tr>
<td>E-CA4</td>
<td>-OH</td>
<td>-OMe</td>
<td>3.466</td>
<td>490</td>
<td>0.15</td>
<td>334</td>
<td>390</td>
</tr>
<tr>
<td>E-CA4F</td>
<td>-F</td>
<td>-OMe</td>
<td>4.275</td>
<td>810</td>
<td>0.29</td>
<td>332</td>
<td>392</td>
</tr>
<tr>
<td>E-CNCA4</td>
<td>-H</td>
<td>-CN</td>
<td>3.882</td>
<td>707</td>
<td>0.15</td>
<td>343</td>
<td>468</td>
</tr>
<tr>
<td>E-DMACA4</td>
<td>-H</td>
<td>-N(Me)₂</td>
<td>4.229</td>
<td>360</td>
<td>---</td>
<td>328</td>
<td>450</td>
</tr>
<tr>
<td>E-ACA4</td>
<td>-NH₂</td>
<td>-OMe</td>
<td>3.595</td>
<td>4,800</td>
<td>0.28</td>
<td>355</td>
<td>465</td>
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</tbody>
</table>
FIGURE 6

A

B

Fluorescence Intensity

Laser Power (mW)

% Conversion cis → trans

Laser Power (mW)
FIGURE 7

E-CA4 in DCM

Wavenumber (cm⁻¹)

Absorbance

Time (picoseconds)

Absorbance

Z-CA4 FTIR

E-CA4 FTIR
FIGURE 8

Z-CA4 in DCM

Absorbance vs. Wavenumber (cm⁻¹)

Time (ps)

Absorbance vs. Time (ps)

Z-CA4 in DCM

E-CA4 in DCM

-3.5E-04 -3.0E-04 -2.5E-04 -2.0E-04 -1.5E-04 -1.0E-04 -5.0E-05 0.0E+00 5.0E-05 1.0E-04 1.5E-04 2.0E-04 2.5E-04 3.0E-04 3.5E-04

1300 1350 1400 1450 1500 1550 1600 1650

Absorbance vs. Wavenumber (cm⁻¹)

Z-CA4 in DCM

E-CA4 in DCM