Supporting Information

Highly Effective Inactivation of SARS-CoV-2 by Conjugated Polymers and Oligomers

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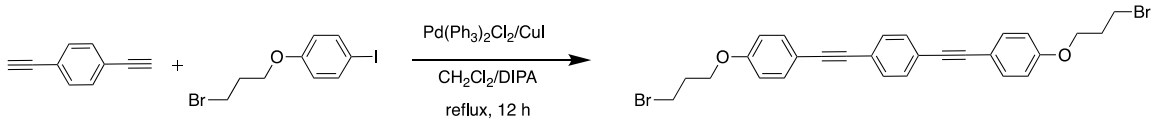
Materials

All starting materials and reagents were obtained from commercial sources (Sigma-Aldrich, Fisher Scientific) and used without further purification. All reactions were performed under a nitrogen atmosphere, unless stated otherwise. Compounds **1**, **2, 3b, poly-4** and **poly-5** were synthesized by following the literature procedure.[1-5]

Characterization Methods

UV-Visible spectra for all the samples were recorded at a concentration of 10 µg/mL in water using the PerkinElmer Lambda 35 UV-Vis spectrophotometer.

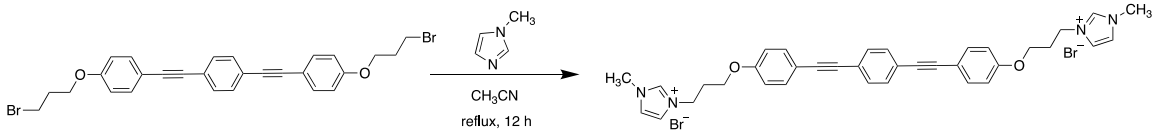
1,4-bis((4-(3-bromopropoxy)phenyl)ethynyl)benzene (3c).



3a **3b** **3c**

To a degassed solution of **3a** (300 mg, 2.378 mmol) and **3b** (1.62 g, 4.756 mmol) in 60 mL CH_2Cl_2 and 20 mL diisopropyl amine, $Pd(PPh_3)_2Cl_2$ (167 mg, 0.238 mmol), CuI (90 mg, 0.476 mmol) were added. The mixture was refluxed for 12 h. The product was separated between saturated aq.NH_4Cl and CH_2Cl_2, and washed with D.I. water. The CH_2Cl_2 layer was dried over anhydrous Na_2SO_4 and distilled off the solvent under reduced pressure. The crude product was passed through a silica gel column using hexane/DCM as the mobile phase to isolate **3c** as a pale white solid. Yield: 710 mg (76 %).

3,3'-((((1,4-phenylenebis(ethyne-2,1-diyl))bis(4,1-phenylene))bis(oxy))bis(propane-3,1-diyl))bis(1-methyl-1*H*-imidazol-3-ium) bromide (3).



3c **3**

To a solution of **3c** (500 mg, 0.905 mmol) in 30 mL CH_3CN, 1-methylimidazole (164 mg, 2 mmol, 2.2 eq.) was added and refluxed for 12 h. The precipitated solid product was filtered and was washed with cold CH_3CN. The product was dried under high vacuum to remove any trace amount of solvent. Yield: 600 mg (93 %). HRMS ($\mathbf{3}^{2+}$ ion calculated 278.1413, found 278.1427).

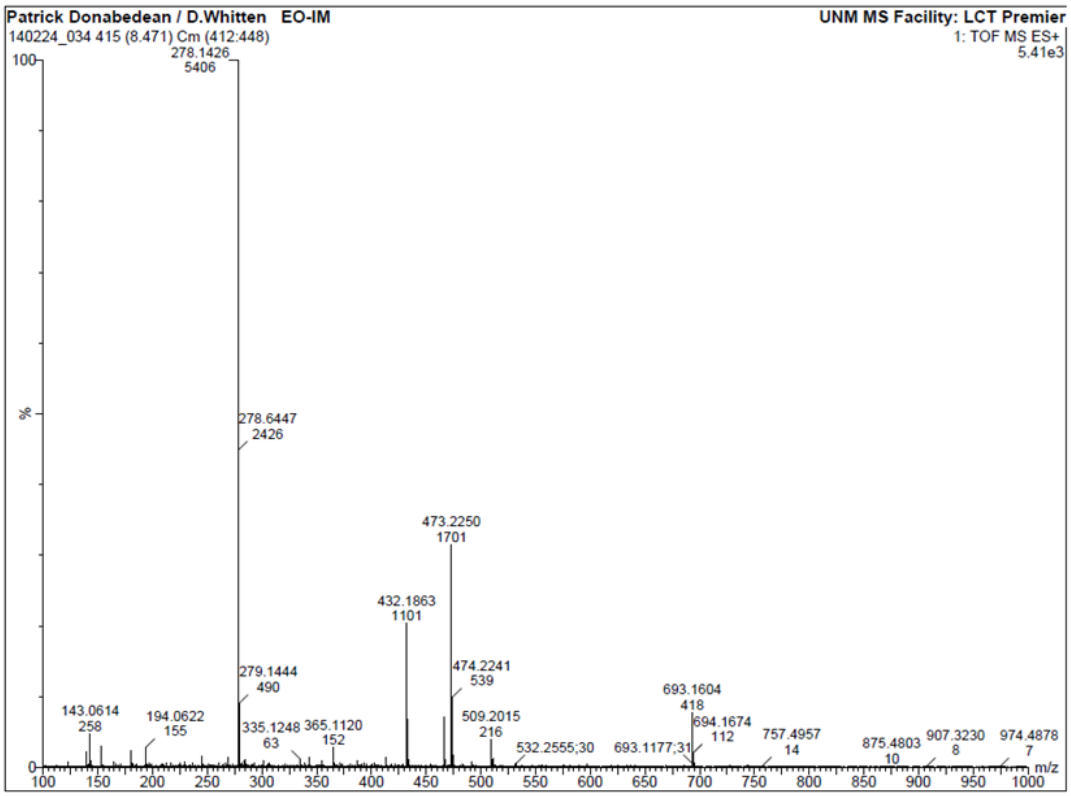


Figure S-1. High resolution mass spectrum of oligomer **3**.

Photolysis Light Sources

Samples were exposed to light for the indicated periods using using a Luzchem photoreactor (Luzchem.com) equipped with either near-UV or visible light sources. The spectral distribution of the light from the two sources is shown below.

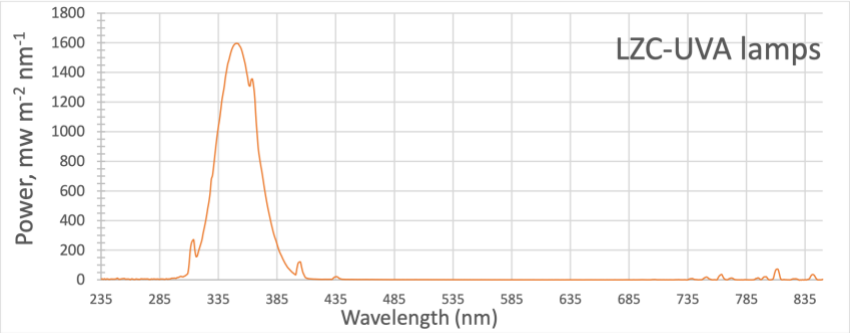


Figure S-2. Spectral distribution for LZC-UVA lamps used for near-UV irradiation of samples. The irradiance at the sample with this light source is 6.7 mW-cm^{-2}.

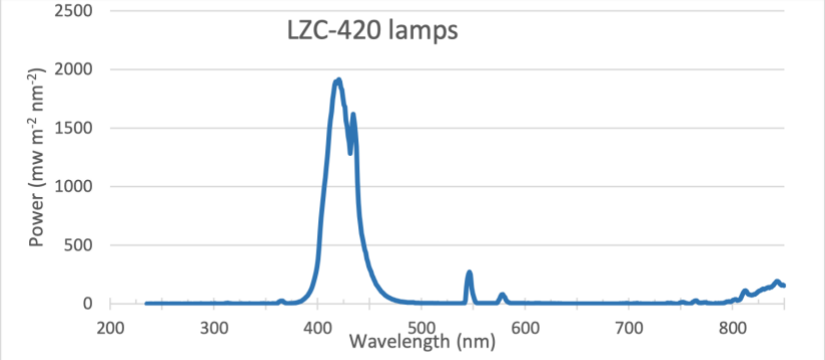


Figure S-3. Spectral distribution for LZC-420 lamps used for visible irradiation of samples. Visible region irradiance at the sample with this light source is 6.7 mW-cm^{-2}.

References

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