

# Materials List for:

## Integrating a Triplet-triplet Annihilation Up-conversion System to Enhance Dye-sensitized Solar Cell Response to Sub-bandgap Light

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### Materials

| Name                                                                                                                               | Company                        | Catalog Number    | Comments                        |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------|---------------------------------|
| (tetrakis(3,5-di-tert-butylphenyl)-6'-amino-7'-nitro-tetrakisquinoxalino[2,3-b'7,8-b"12,13-b"17,18-b"-porphyrinato) palladium(II)) | in house                       | in house          | Chem. Commun., 4851–4853 (2007) |
| 1,2-dimethyl-3-propylimidazolium iodide                                                                                            | Solaronix                      | 33150             | Material warning: Irritant      |
| 405 nm longpass filter                                                                                                             | Semrock                        | BLP01-405R-25     | -                               |
| 670 nm laser                                                                                                                       | Thorlabs                       | LDS5 + CPS198     | -                               |
| Acetone                                                                                                                            | Chemsupply                     | AA008-20L-P       | Material warning: Flammable     |
| Acetonitrile                                                                                                                       | Sigma                          | 271004            | Material warning: Flammable     |
| Alumina                                                                                                                            | Alfa Aesar                     | 12733             |                                 |
| Alumina                                                                                                                            | Leeco                          | 810-782           |                                 |
| Back filling chamber                                                                                                               | Sistema                        | 1303              | Klip it round, modified         |
| Benzene                                                                                                                            | Scharlau                       | BE0033            | Material warning: Toxic         |
| BNC cable                                                                                                                          | Jaycar                         | RG- 59U           |                                 |
| Cerasolzer                                                                                                                         | MBR                            | CS186             |                                 |
| Chopper wheel                                                                                                                      | Thorlabs                       | MC1000A           |                                 |
| Control software                                                                                                                   | in house                       | in house          | Written in LabVIEW              |
| Current Amplifier                                                                                                                  | Standford Research             | SR 570            |                                 |
| D149 dye                                                                                                                           | 1m                             | OSO149            |                                 |
| Dental burr                                                                                                                        | Priority dental supplies       | 835.104.008       |                                 |
| Detergent                                                                                                                          | Palmolive                      | Original          |                                 |
| Diamond wheel                                                                                                                      | Frameco                        | 14220             |                                 |
| Drill                                                                                                                              | Dremmel                        | 220               |                                 |
| Dynamic signal acquisition device                                                                                                  | National Instruments           | USB-4431          | Analog to Digital               |
| Ethanol                                                                                                                            | Univar                         | 214               | Material warning: Flammable     |
| Glovebox                                                                                                                           | IT systems                     |                   |                                 |
| H <sub>2</sub> PtCl <sub>6</sub>                                                                                                   | Sigma                          | 334472            | Material warning: corrosive     |
| Hot melt adhesive gasket                                                                                                           | Solaronix                      | Meltronic 1170-25 | Surlyn                          |
| Hot melt adhesive gasket                                                                                                           | Solaronix                      | Meltronic 1170-60 | Surlyn                          |
| Hotplate                                                                                                                           | Harry Gestigkeit               | PR 5 3T / PZ28-3T |                                 |
| Hotplate                                                                                                                           | IKA                            | RCT basic         |                                 |
| Image analysis software                                                                                                            | National Institutes for Health | Image-J           |                                 |

|                                                                   |                          |                              |                             |
|-------------------------------------------------------------------|--------------------------|------------------------------|-----------------------------|
| Iodine                                                            | Sigma                    | 326143                       | Material warning: corrosive |
| Laser engraver                                                    | Universal Laser Systems  | PLS6WM                       |                             |
| Liquid Nitrogen                                                   | Air Liquide              |                              |                             |
| Lithium Iodide                                                    | Aldrich                  | 518018                       | Material warning: toxic     |
| Methoxypropionitrile                                              | Sigma                    | 65290                        | Material warning: Flammable |
| Mirror                                                            | Thorlabs                 | PF10-03-P01                  |                             |
| Mirror mount                                                      | Thorlabs                 | KM100                        |                             |
| Monochromator                                                     | Spectral Products        | CM110                        |                             |
| Neutral density filters                                           | Edmund Industrial Optics | 64-352                       |                             |
| Parabolic mirror                                                  | Newport                  | 50329AL, 50338AL             |                             |
| Photodiode                                                        | Newport                  | 918D-UV-OD3                  |                             |
| Power meter                                                       | Newport                  | 1936-C                       |                             |
| Rubrene                                                           | Sigma                    | 551112                       |                             |
| Semi-automatic screen printer                                     | Keywell                  | KY-500FH                     |                             |
| Spray pyrolyser                                                   | Glaskeller               |                              |                             |
| Tape                                                              | 3M                       | Magic Tape                   |                             |
| Terminal block                                                    | Jaycar                   | HM3194                       |                             |
| tert-Butanol                                                      | Sigma                    | 360538                       | Material warning: Flammable |
| TiCl <sub>4</sub>                                                 | Sigma                    | 89545                        | Material warning: corrosive |
| Tile                                                              | Johnson tiles            |                              |                             |
| Tile cutter                                                       | DTA                      | DTA-310                      |                             |
| TiO <sub>2</sub> paste                                            | Dyesol                   | NR18-T                       | -                           |
| Titanium diisopropoxide bis(acetylacetonate) (75% in isopropanol) | Aldrich                  | 325252                       | Material warning: Flammable |
| Ultrasonic soldering iron                                         | MBR                      | USS-9200                     |                             |
| UV cure epoxy                                                     | Dymax                    | 425                          | Material warning: Irritant  |
| UV cure system                                                    | Dymax                    | BlueWave 50                  |                             |
| UV Visible Spectrophotometer                                      | Varian Cary              | 1E                           |                             |
| Vacuum cuvette                                                    | Custom made              | Custom made                  |                             |
| Vacuum pump                                                       |                          | Rotary backed diffusion pump |                             |
| Wipes                                                             | Kimtech                  | 34120KC                      | Kimwipes                    |
| Xe lamp                                                           | Energetiq                | LDLSTM EQ-1500               | White light source          |