

Electronic Supplementary Information

Light Trapping in Hematite-Coated Transparent Particles for Solar Fuel Generation

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| Complex refractive index ($\eta=n+ik$)data of TiO ₂ | | | Complex refractive index ($\eta=n+ik$)data of Fe ₂ O ₃ | | |
|--|--------|-------|--|------|------|
| Wavelength (nm) | n | k | Wavelength (nm) | n | k |
| 350 | 2.8459 | 0.06 | 350 | 2.35 | 1.08 |
| 355 | 2.8216 | 0.047 | 355 | 2.36 | 1.09 |
| 360 | 2.7982 | 0.035 | 360 | 2.36 | 1.12 |
| 365 | 2.7757 | 0.026 | 365 | 2.38 | 1.15 |
| 370 | 2.7541 | 0.019 | 370 | 2.41 | 1.17 |
| 375 | 2.7334 | 0.012 | 375 | 2.44 | 1.2 |
| 380 | 2.7134 | 0.06 | 380 | 2.48 | 1.23 |
| 385 | 2.6942 | 0.02 | 385 | 2.52 | 1.25 |
| 390 | 2.6758 | 0 | 390 | 2.57 | 1.25 |
| 395 | 2.6581 | 0 | 395 | 2.63 | 1.25 |
| 400 | 2.6411 | 0 | 400 | 2.69 | 1.24 |
| 405 | 2.6248 | 0 | 405 | 2.73 | 1.24 |
| 410 | 2.6091 | 0 | 410 | 2.78 | 1.23 |
| 415 | 2.594 | 0 | 415 | 2.82 | 1.23 |
| 420 | 2.5796 | 0 | 420 | 2.87 | 1.21 |
| 425 | 2.5657 | 0 | 425 | 2.91 | 1.18 |
| 430 | 2.5524 | 0 | 430 | 2.95 | 1.15 |
| 435 | 2.5396 | 0 | 435 | 2.99 | 1.11 |
| 440 | 2.5273 | 0 | 440 | 3.02 | 1.07 |
| 445 | 2.5155 | 0 | 445 | 3.04 | 1.02 |
| 450 | 2.5042 | 0 | 450 | 3.06 | 0.97 |
| 455 | 2.4933 | 0 | 455 | 3.08 | 0.93 |
| 460 | 2.4829 | 0 | 460 | 3.1 | 0.89 |
| 465 | 2.4728 | 0 | 465 | 3.11 | 0.86 |
| 470 | 2.4632 | 0 | 470 | 3.12 | 0.83 |
| 475 | 2.4539 | 0 | 475 | 3.13 | 0.81 |
| 480 | 2.445 | 0 | 480 | 3.14 | 0.78 |
| 485 | 2.4364 | 0 | 485 | 3.15 | 0.75 |

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|-----|--------|---|-----|------|------|
| 490 | 2.4281 | 0 | 490 | 3.15 | 0.72 |
| 495 | 2.4202 | 0 | 495 | 3.15 | 0.69 |
| 500 | 2.4125 | 0 | 500 | 3.15 | 0.65 |
| 505 | 2.4051 | 0 | 505 | 3.14 | 0.63 |
| 510 | 2.3979 | 0 | 510 | 3.14 | 0.6 |
| 515 | 2.391 | 0 | 515 | 3.13 | 0.58 |
| 520 | 2.3844 | 0 | 520 | 3.13 | 0.57 |
| 525 | 2.3779 | 0 | 525 | 3.14 | 0.56 |
| 530 | 2.3717 | 0 | 530 | 3.14 | 0.54 |
| 535 | 2.3656 | 0 | 535 | 3.15 | 0.53 |
| 540 | 2.3597 | 0 | 540 | 3.17 | 0.52 |
| 545 | 2.354 | 0 | 545 | 3.19 | 0.51 |
| 550 | 2.3485 | 0 | 550 | 3.2 | 0.49 |
| 555 | 2.3431 | 0 | 555 | 3.21 | 0.47 |
| 560 | 2.3378 | 0 | 560 | 3.22 | 0.43 |
| 565 | 2.3327 | 0 | 565 | 3.23 | 0.4 |
| 570 | 2.3276 | 0 | 570 | 3.23 | 0.36 |
| 575 | 2.3227 | 0 | 575 | 3.22 | 0.31 |
| 580 | 2.318 | 0 | 580 | 3.21 | 0.27 |
| 585 | 2.3133 | 0 | 585 | 3.19 | 0.23 |
| 590 | 2.3087 | 0 | 590 | 3.17 | 0.2 |
| 595 | 2.3042 | 0 | 595 | 3.14 | 0.18 |
| 600 | 2.2997 | 0 | 600 | 3.12 | 0.16 |
| 605 | 2.2954 | 0 | 605 | 3.1 | 0.14 |
| 610 | 2.2911 | 0 | 610 | 3.08 | 0.13 |
| 615 | 2.2869 | 0 | 615 | 3.06 | 0.12 |
| 620 | 2.2827 | 0 | 620 | 3.04 | 0.11 |
| 625 | 2.2786 | 0 | 625 | 3.03 | 0.1 |
| 630 | 2.2746 | 0 | 630 | 3.01 | 0.09 |
| 635 | 2.2706 | 0 | 635 | 3 | 0.09 |
| 640 | 2.2667 | 0 | 640 | 2.98 | 0.08 |
| 645 | 2.2629 | 0 | 645 | 2.97 | 0.08 |
| 650 | 2.2591 | 0 | 650 | 2.96 | 0.07 |
| 655 | 2.2554 | 0 | 655 | 2.95 | 0.07 |
| 660 | 2.2517 | 0 | 660 | 2.94 | 0.07 |
| 665 | 2.248 | 0 | 665 | 2.93 | 0.06 |
| 670 | 2.2445 | 0 | 670 | 2.92 | 0.06 |
| 675 | 2.241 | 0 | 675 | 2.91 | 0.06 |
| 680 | 2.2376 | 0 | 680 | 2.9 | 0.06 |
| 685 | 2.2342 | 0 | 685 | 2.89 | 0.05 |
| 690 | 2.2309 | 0 | 690 | 2.88 | 0.05 |
| 695 | 2.2277 | 0 | 695 | 2.88 | 0.05 |
| 700 | 2.2246 | 0 | 700 | 2.87 | 0.05 |
| 705 | 2.2215 | 0 | 705 | 2.86 | 0.04 |
| 710 | 2.2186 | 0 | 710 | 2.85 | 0.04 |
| 715 | 2.2157 | 0 | 715 | 2.84 | 0.04 |
| 720 | 2.213 | 0 | 720 | 2.84 | 0.04 |
| 725 | 2.2104 | 0 | 725 | 2.83 | 0.04 |
| 730 | 2.2079 | 0 | 730 | 2.83 | 0.04 |
| 735 | 2.2055 | 0 | 735 | 2.82 | 0.04 |

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|-----|--------|---|-----|------|------|
| 740 | 2.2033 | 0 | 740 | 2.81 | 0.04 |
| 745 | 2.2012 | 0 | 745 | 2.81 | 0.04 |
| 750 | 2.1993 | 0 | 750 | 2.8 | 0.03 |
| 755 | 2.1976 | 0 | 755 | 2.8 | 0.03 |
| 760 | 2.196 | 0 | 760 | 2.79 | 0.03 |
| 765 | 2.1946 | 0 | 765 | 2.79 | 0.03 |
| 770 | 2.1935 | 0 | 770 | 2.78 | 0.03 |
| 775 | 2.1925 | 0 | 775 | 2.78 | 0.03 |
| 780 | 2.1918 | 0 | 780 | 2.77 | 0.03 |
| 785 | 2.1914 | 0 | 785 | 2.77 | 0.03 |
| 790 | 2.1912 | 0 | 790 | 2.76 | 0.03 |
| 795 | 2.1913 | 0 | 795 | 2.76 | 0.03 |
| 800 | 2.1916 | 0 | 800 | 2.76 | 0.03 |