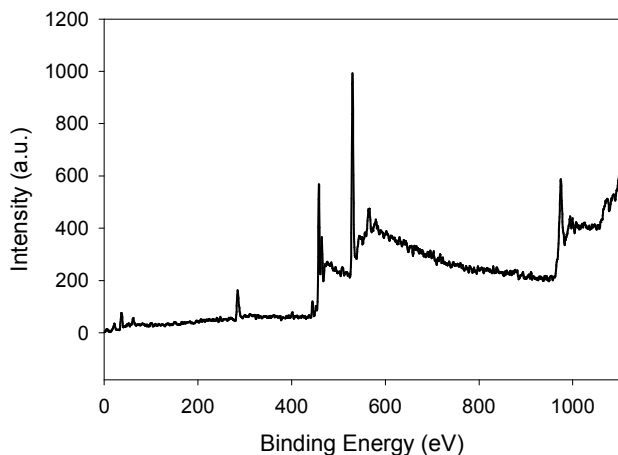


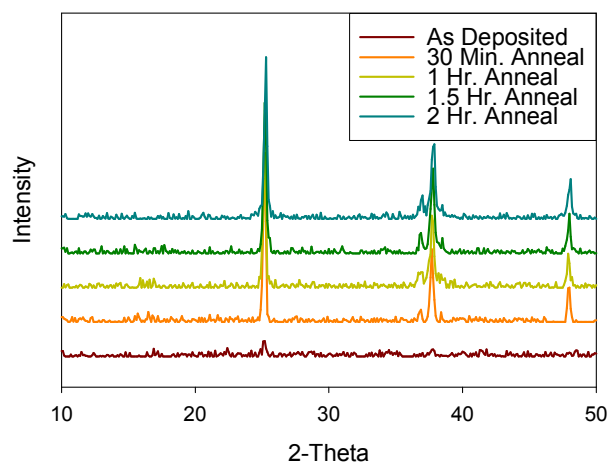
## Supporting Information

### Toward Plasmonic Solar Cells: Protection of Silver Nanoparticles via Atomic Layer Deposition of TiO<sub>2</sub>

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**Figure S1.** XPS spectrum of a silicon chip coated with 4.5 nm (129 cycles) of TiO<sub>2</sub> after annealing at 450°C for 30 minutes in N<sub>2</sub>.



**Figure S2.** PXRD patterns for commercial anodic aluminum oxide coated with 20 nm (570 cycles) of TiO<sub>2</sub>. Patterns were collected for as deposited TiO<sub>2</sub> as well as samples that had been annealed from 30 minutes to 2 hours at 450°C in N<sub>2</sub>.

**Table S1.** Number of ALD cycles of TiO<sub>2</sub> deposited on samples without an adhesion layer. The corresponding TiO<sub>2</sub> thicknesses were determined by ellipsometry. The degree of etching of the samples after exposure to I<sup>-</sup>/I<sub>3</sub><sup>-</sup> was determined by analyzing SEM micrographs and extinction spectra of the samples.

| Cycles TiO <sub>2</sub> | Thickness TiO <sub>2</sub> (nm) | Degree of Etching |
|-------------------------|---------------------------------|-------------------|
| 125                     | 3.6                             | Complete          |
| 135                     | 4.0                             | Complete          |
| 141                     | 4.4                             | Complete          |
| 156                     | 4.6                             | Severe            |
| 172                     | 4.8                             | Severe            |
| 188                     | 5.4                             | Complete          |
| 200                     | 5.7                             | Mild              |
| 203                     | 6.0                             | None              |
| 233                     | 6.4                             | Mild              |
| 267                     | 7.1                             | Mild              |
| 300                     | 7.7                             | None              |
| 333                     | 8.8                             | None              |

**Table S2.** Number of ALD cycles of TiO<sub>2</sub> deposited on samples with a 0.2 nm (2 cycles) Al<sub>2</sub>O<sub>3</sub> adhesion layer. The corresponding TiO<sub>2</sub> thicknesses were determined using ellipsometry. The degree of etching of the samples after exposure to I<sup>-</sup>/I<sub>3</sub><sup>-</sup> was determined by analyzing SEM micrographs and extinction spectra of the samples.

| Cycles TiO <sub>2</sub> | Thickness TiO <sub>2</sub> (nm) | Total Thickness (nm) | Degree of Etching |
|-------------------------|---------------------------------|----------------------|-------------------|
| 118                     | 3.6                             | 3.8                  | Severe            |
| 136                     | 4.4                             | 4.6                  | Severe            |
| 171                     | 5.0                             | 5.2                  | Severe            |
| 177                     | 5.0                             | 5.2                  | None              |
| 211                     | 5.6                             | 5.8                  | None              |
| 154                     | 6.2                             | 6.4                  | None              |
| 244                     | 6.8                             | 7.0                  | None              |
| 277                     | 7.5                             | 7.7                  | None              |
| 225                     | 7.8                             | 8.0                  | None              |
| 311                     | 8.7                             | 8.9                  | None              |
| 344                     | 9.3                             | 9.5                  | None              |