

## Supporting Information

### **Biosynthesis of Palladium Nanoparticles Using *Shewanella loihica***

#### **PV-4 for Excellent Catalytic Reduction of Chromium (VI)**

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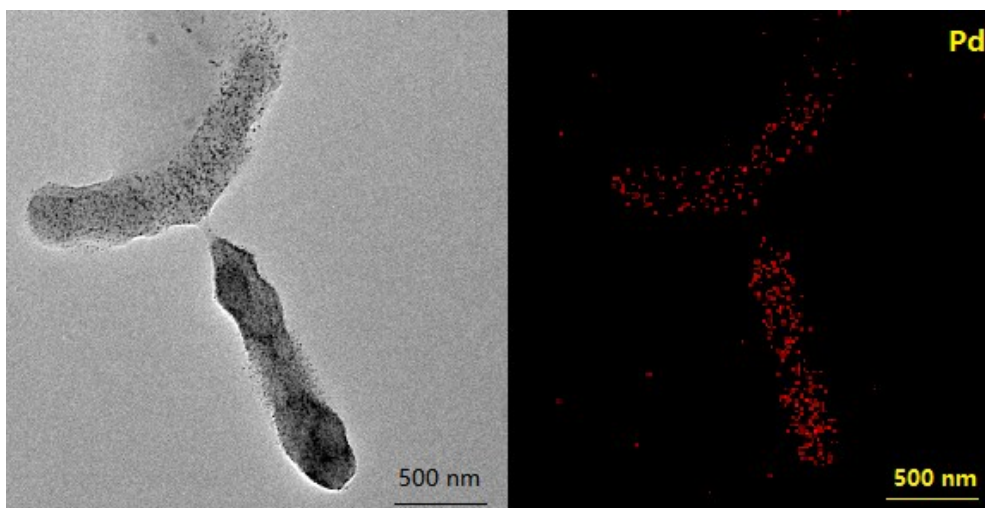
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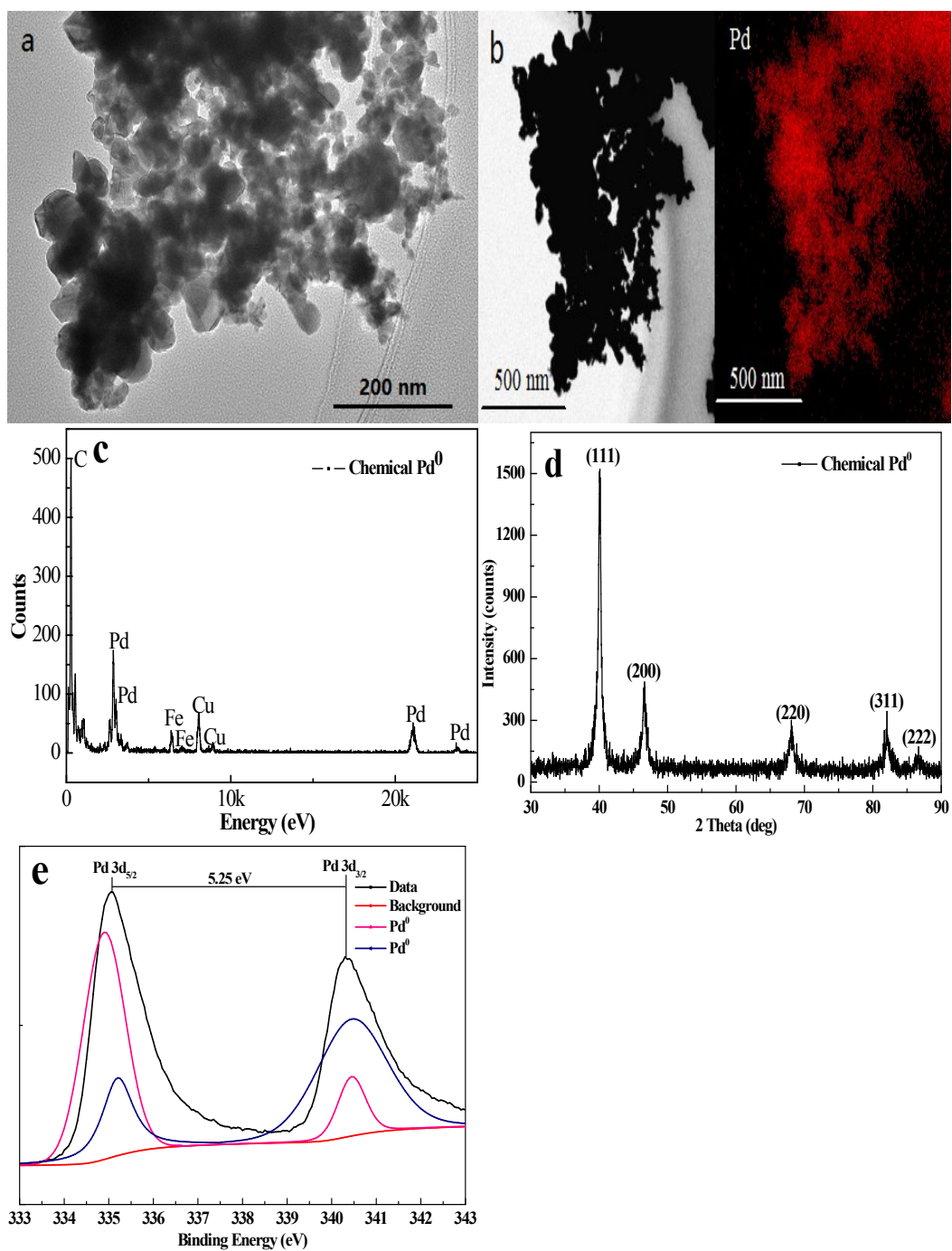
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**Table S1.** Summaries of bacterial strains used for biosynthesis of Pd-NPs and properties of the products.

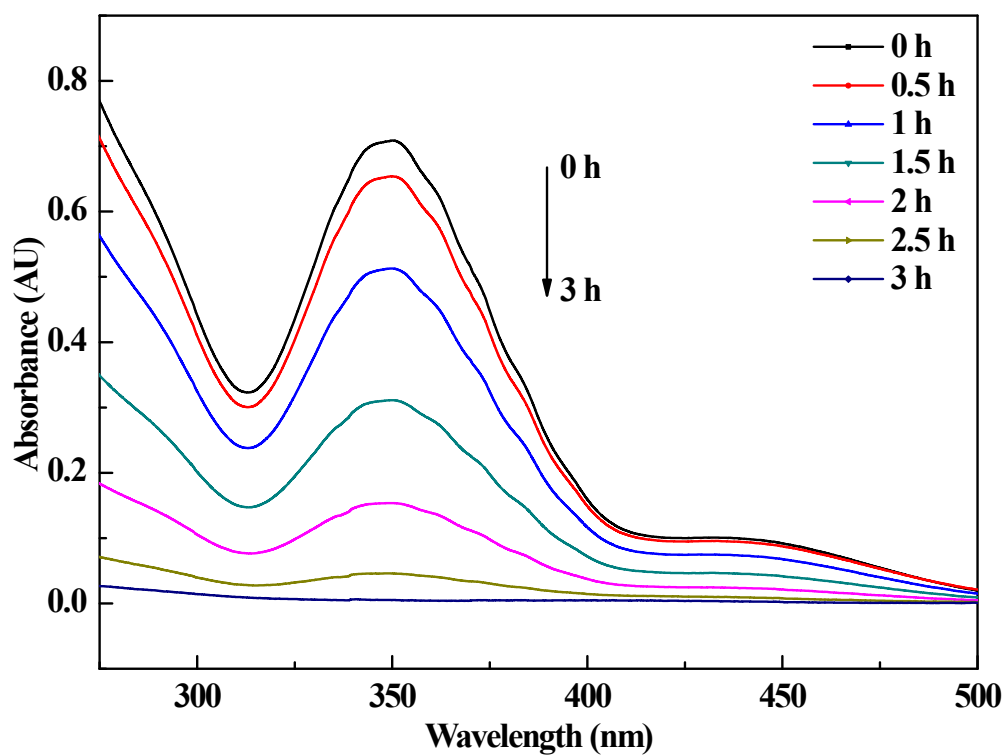
| Bacterial species                                      | Electron donors          | Bacterial concentration                                | Pd(II) concentration | Particle size    | Ref.       |
|--------------------------------------------------------|--------------------------|--------------------------------------------------------|----------------------|------------------|------------|
| <i>Desulfovibrio desulfuricans</i>                     | H <sub>2</sub>           | 0.21 g/L                                               | 2 mM                 | 50-100 nm        | 1          |
| <i>Desulfovibrio</i>                                   | H <sub>2</sub>           | 0.21 g/L                                               | 2 mM                 | ~15 nm           | 2          |
| <i>Shewanella oneidensis</i>                           | Sodium formate           | 10 mL cell suspension                                  | 1 mM                 | 10-20 nm         | 3          |
| <i>Desulfovibrio desulfuricans</i>                     | H <sub>2</sub> , formate | 0.25 g/L                                               | 2 mM                 | 11-12 nm         | 4          |
| <i>Dsulfovibrio desulfuricans</i>                      | H <sub>2</sub>           | 0.1 g/L                                                | 2 mM                 | 50 nm            | 5          |
| <i>Dsulfovibrio vulgaris</i>                           | H <sub>2</sub>           | 0.3 g/L                                                | 0.94 mM              | 30-50 nm         | 6          |
| <i>Shewanella oneidensis</i> MR-1                      | Lactate, ethanol         | OD <sub>610</sub> of 2.0                               | 0.5 mM               | —                | 7          |
| <i>Shewanella oneidensis</i> MR-1                      | H <sub>2</sub>           | 0.03 g/L                                               | 4.72 mM              | 10-50 nm         | 8          |
| <i>Escherichia coli</i> ,<br><i>Pseudomonas putida</i> | Formate                  | OD <sub>610</sub> of 0.53<br>OD <sub>610</sub> of 1.40 | 2 mM                 | 100 nm<br>200 nm | 9          |
| <i>Escherichia coli</i>                                | H <sub>2</sub> , Formate | 3.2 g/L                                                | 6 mM                 | 10-50 nm         | 10         |
| <i>Klebsiella Pneumoniae</i>                           | H <sub>2</sub>           | 4 g/L                                                  | 2 mM                 | 5-26.5 nm        | 11         |
| <i>Enterococcus faecalis</i>                           | Sodium formate           | 1.2 g/L                                                | 1.98 mM              | 10-60 nm         | 12         |
| <i>Shewanella loihica</i> PV-4                         | Sodium formate           | OD <sub>610</sub> of 2.0                               | 1 mM                 | 4-10 nm          | This study |



**Figure S1.** Elemental mapping of the biosynthesized Pd-NPs.



**Figure S2.** Characterization of chemical Pd<sup>0</sup>. (a) TEM image; (b) elemental mapping; (c) EDS pattern; (d) XRD pattern; (e) XPS spectra.



**Figure S3.** UV-vis spectra of Cr(VI) aqueous solutions at different intervals with presence of biogenetic Pd-NPs.

## References

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