

## Supplemental Information:

### Zirconium Phosphate Nanoplatelets: A Biocompatible Nanomaterial for Drug Delivery to Cancer

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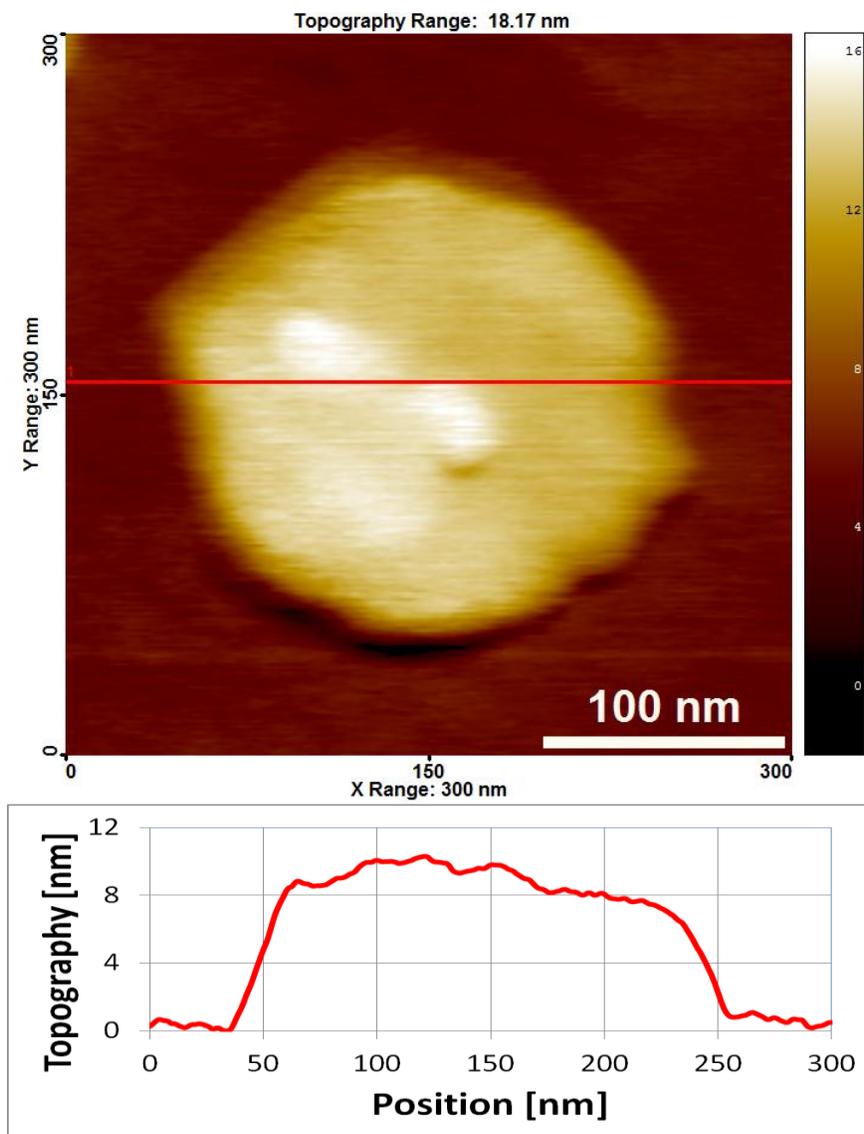
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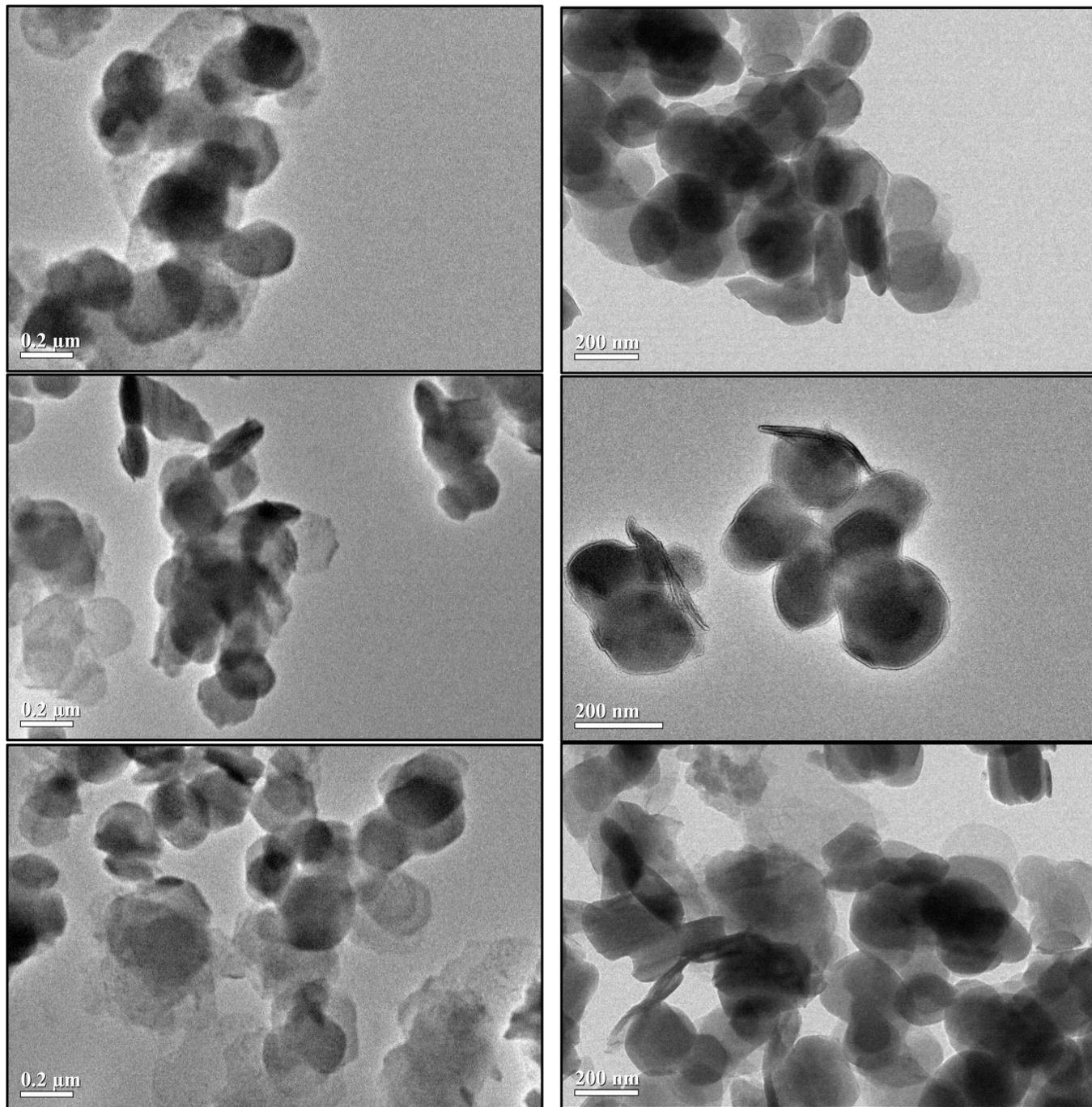
E-mail: [hussain@tamhsc.edu](mailto:hussain@tamhsc.edu)



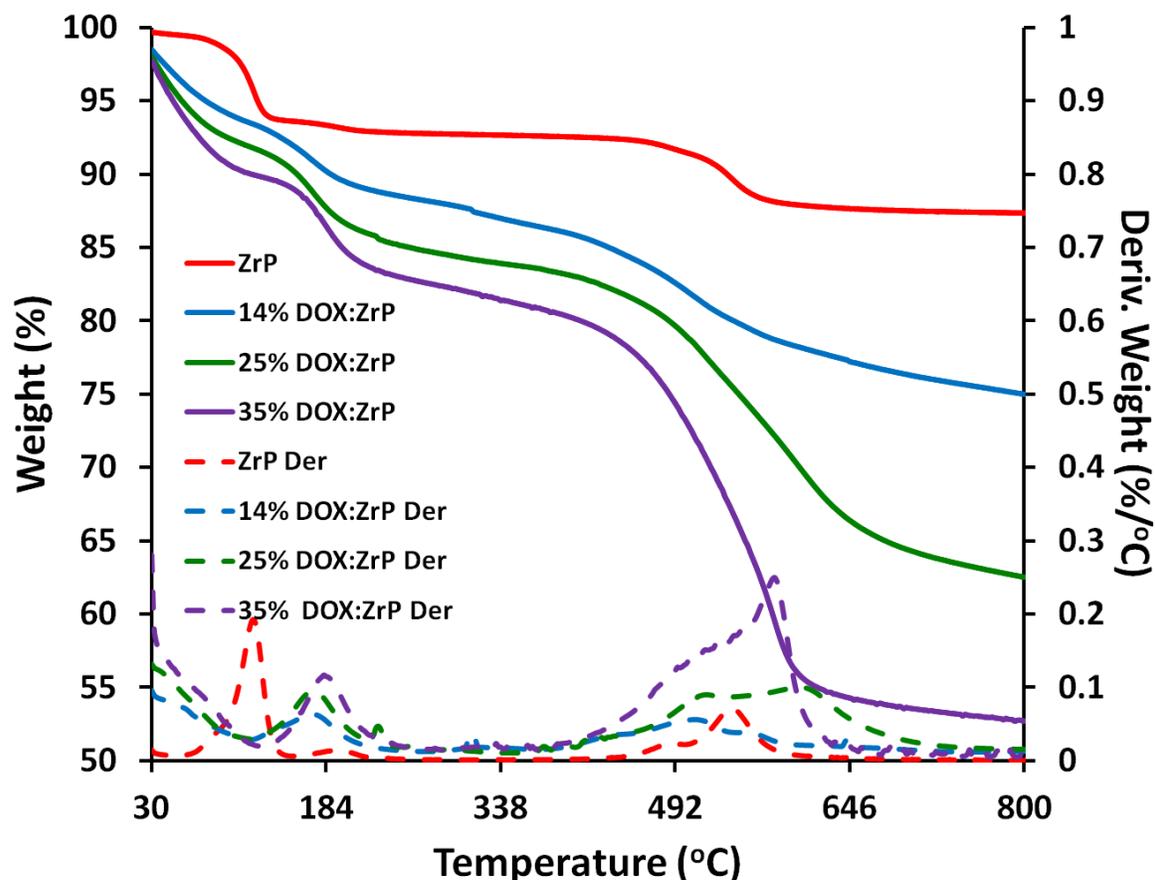
**Supplemental Figure #1:** Top: AFM 2-D topography image of a single platelet of ZrP showing a particle diameter of ca. 187 nm. Bottom: Cross sectional height profile for the ZrP nanoparticle in the top AFM image marked by the red line.

14% DOX:ZrP

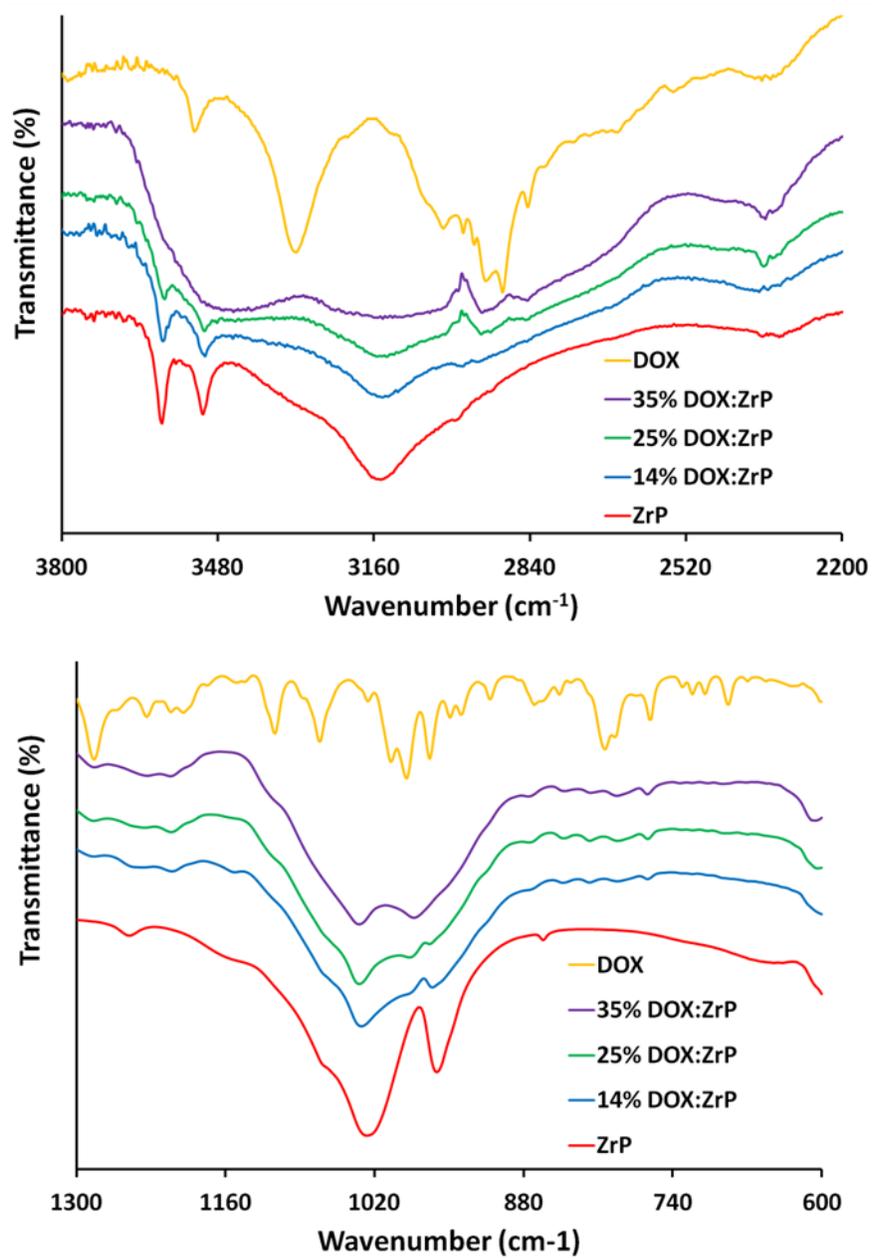
25% DOX:ZrP



**Supplemental Figure #2:** TEM images of DOX:ZrP NPs at 14% and 25% loading levels.



**Supplemental Figure #3:** Thermogravimetric analysis of ZrP NPs and the DOX:ZrP intercalation products at various loading levels. Primary axis = whole lines showing the weight loss as a function of temperature; secondary axis = dashes lines showing the derivative of the weight loss as a function of temperature. Weight loss below 120 °C are attributed to water on the surface and intercalated within the layers of ZrP and DOX:ZrP materials. A second loss at ca. 185 °C are attributed to the beginning of the decomposition of the intercalated doxorubicin. The final two overlapped weight losses at ca. 490 °C and ca. 600 °C are attributed to the final thermal decomposition of doxorubicin and the condensation of the phosphate groups, respectively, with a final thermo-decomposition product of  $\text{ZrP}_2\text{O}_7$  [ $\text{Zr}(\text{H}_{1-x/2}\text{PO}_4)_2(\text{DOX})_x \cdot n\text{H}_2\text{O}(\text{s}) + \text{heat} (>700\text{ }^\circ\text{C}) \rightarrow \text{ZrP}_2\text{O}_7(\text{s}) + \text{H}_2\text{O}(\text{g}) + \text{CO}_2(\text{g}) + \text{NO}_x(\text{g})$ ].



**Supplemental Figure #4:** FTIR spectra of DOX, ZrP NPs and the DOX:ZrP intercalation products at various loading levels of DOX.