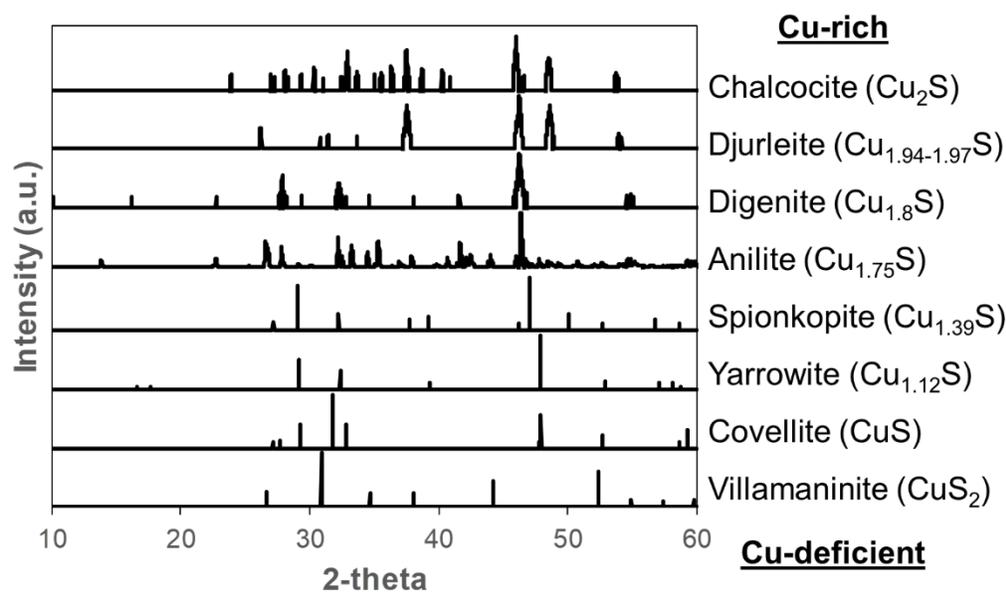
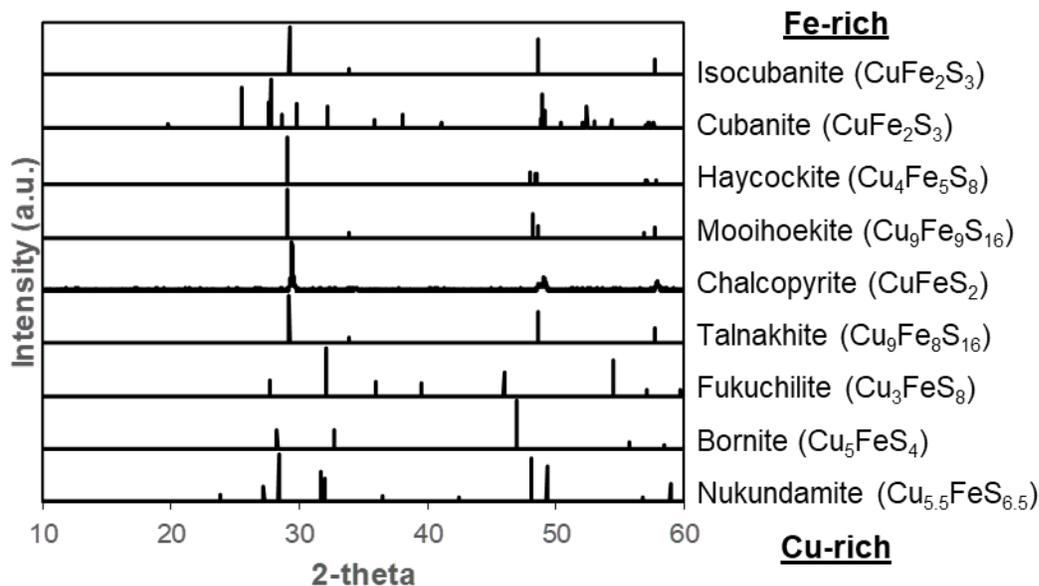


## Supplemental File

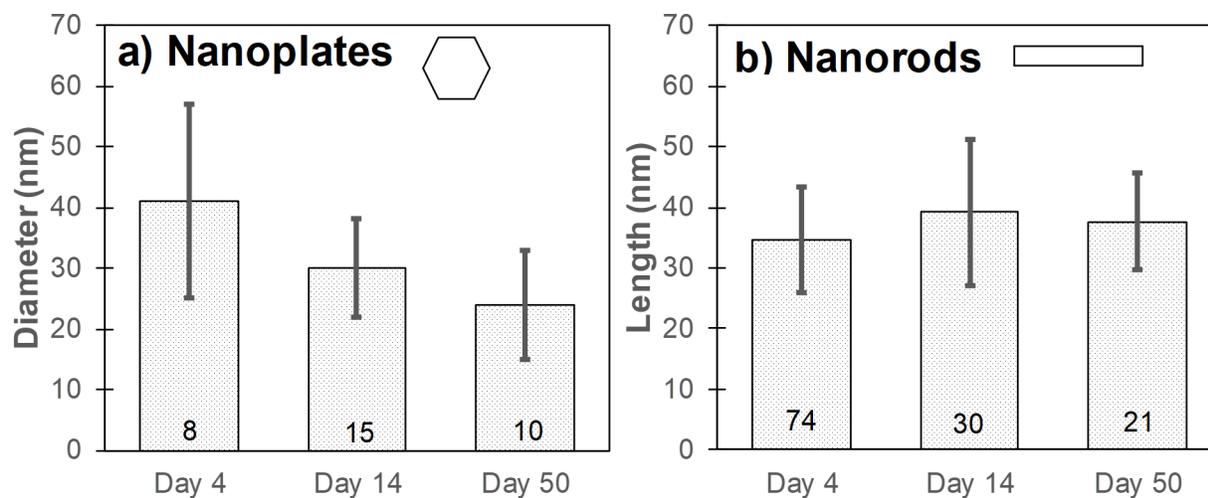
### Supplementary Figures



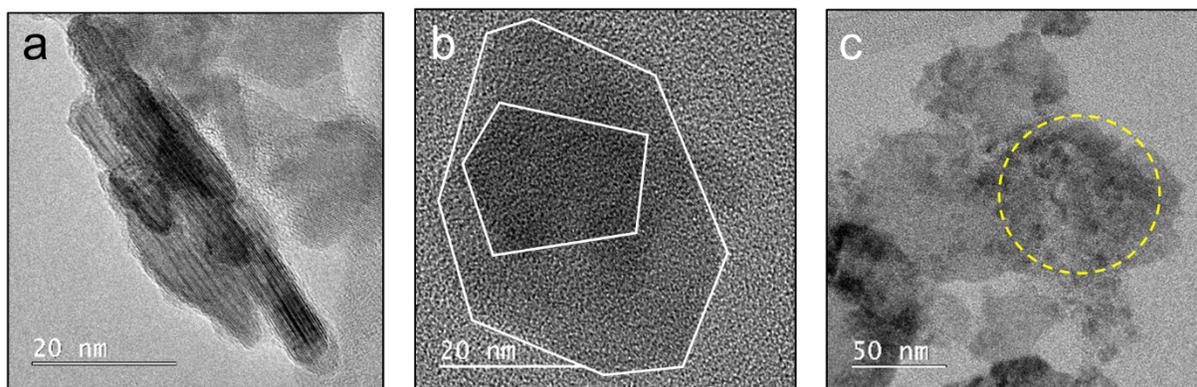
**Figure S1:** XRD patterns of all recognized phases in the Cu-S mineral system, assuming a  $\text{CuK}\alpha$  X-ray source. The patterns for yarrowite and spionkopite were derived from Goble (1980). All other patterns were compiled from the American Mineralogist Crystal Structure Database (<http://rruff.geo.arizona.edu/AMS/amcsd.php>; accessed date January 9, 2019; Downs and Hall-Wallace, 2003).



**Figure S2:** XRD patterns of all recognized phases in the mixed Fe-Cu-S mineral system, assuming a CuK $\alpha$  X-ray source. The patterns were compiled from the American Mineralogist Crystal Structure Database (<http://ruff.geo.arizona.edu/AMS/amcsd.php>; accessed date January 9, 2019; Downs and Hall-Wallace, 2003).



**Figure S3:** Changes in crystal sizes over time for precipitates from biogenic, 'pure Cu' system. The nanoplates decrease in size over time, while the nanorods are unchanged over a period of 50 days. Numbers in the bar charts indicate the amount of nanoparticles that were measured from TEM images.



**Figure S4:** (a) An aggregate of covellite nanorods. (b) A small nanoplate and (c) fine nanocrystals (outlined in yellow) of covellite on top of larger nanoplates.