

**Centennial Honors College**  
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**Poster Presentation**

**Origin of Stromatolites in the Precambrian Copper Harbor Conglomerate,  
Michigan**

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Geology**

The formation of interest is the Copper Harbor Conglomerate, which is located in Upper Peninsula Michigan. This conglomerate was deposited during the Precambrian in the Keweenawan Trough, as an aborted proto-oceanic rift. The interest in this project is to find out exactly how stromatolites formed in this location. Stromatolites are layered accretionary structures; formed in shallow water by the trapping, binding and cementation of sedimentary grains by microorganisms like cyanobacteria. Stromatolites provide the most ancient records of life on Earth. In order to get stromatolites you need the right environment such as shallow water, lots of sunlight, and low wave energy environments.

Stromatolites are found in a conglomerate at this location with gravel above and below where the stromatolites are located. In order to get a conglomerate you need river currents strong enough to move gravel (>2 millimeters) and that means high energy.

When looking at the petrography, there appears to be a reoccurring pattern throughout the slides. There are three different fabrics. The first fabric contains what was once loose material. This material was deposited on top of fabric 2. This fabric is light brown to dark brown in color, with the appearance of detailed laminated layers. Fabric two is calcite cement layered with laminations mostly light to dark grey in color, but they are faint and hard to see. Fabric three is just like fabric two, but has a clotted appearance compared to laminations. Quartz silt is present in all three of these fabrics.

After looking at the data, fabric two is layered stromatolites. Fabric one is loose material that has been deposited on top of fabric two. Fabric three is an altered form of stromatolites. This area once contained a lake, but also had the presence of arid environments as well.