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Poster Presentation

Cave Pearls in the Quincy Underground Limestone Mine

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Cave pearls are spherical concretions (less than 5 cm in diameter) that form in caves by concentric growth of calcium carbonate. They form in two different environments: pisolithic fields and pearl nests. Pisolithic fields form in areas where the water flows over the top of the pearls. The other environment, pearl nests, form in an area where the water splashes directly onto the pearls. An interesting part about these pearls in this study (forming in the Quincy Underground Limestone Mine) is the time, less than five years, which they took to grow. This study looked at pearls from a pisolithic field, and compares them to pearls from a pearl nest only 3 m away.

The pearls show the same banding and pattern that can be traced around the full extent of the pearl. The large pearls (Slides 1 and 2) range from 7.2mm to 5.1mm. The smaller pearls (Slides 3 and 4) range from 3.7mm to .4mm. They all showed an alternating light-dark repeating pattern with thinly laminated layers followed by an unlaminated fuzzy dendritic pattern. The laminated layers consist of the light-colored micritic laminated with spar while the dark layer is a dendritic pattern. The larger pearls consist of approximately 40-50 sets of these thinly laminated layers while the smaller pearls have 5-10 sets. Some examples show a blocky spar that cross-cut these layers starting from the nucleus and building out.

Flow zone pearls in other studies look much different (differences include concentric laminations and radial structures) than those pearls that form in a splash zone. However, both types of pearls from the Quincy mine are very similar with only slight differences in size and shape. Past works have said that the laminated micrite pattern is attributed with the change of the seasons. Given the age of the pearls for this study, this idea is disproved. The difference in growth of these pearls could be due to the chemical composition of the water or the groundwater flow of the water into the cave. Mining activities as opposed to the natural processes of caves have also been a possible factor.