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Expanding the utility of Uranium-series dating of speleothems for palaeontological and archaeological applications at limestone cave sites

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Uranium-series (U-series) dating of speleothems is frequently used for palaeoclimate studies but its archaeological and palaeontological applications are limited to stratigraphically significant speleothem formations, such as flowstones, to provide maximum and minimum temporal points. This study targeted soda straw stalactites for U-series dating. In contrast to other speleothem formations, soda straw stalactites are fragile, have typically short life spans (usually only years but rarely up to a few hundred years) and are frequently incorporated into cave deposits. Results of thermal ionisation mass spectrometry (TIMS) U-series dating of soda straw stalactites from palaeontological excavations at Blanche Cave, South Australia, show that small, dense, clean straws tend to yield ages closest to the time of stratigraphic deposition. Multiple age determinations may be generated for a single stratigraphic unit in order to verify age concordance. In conjunction with other dating methods, such as radiocarbon, U-series dating of soda straw stalactites may help to significantly constrain the age of stratigraphic units and associated archaeological and palaeontological deposits in order to provide more robust chronologies. Here we advocate the collection of soda straw stalactites at future excavations of limestone cave sites.