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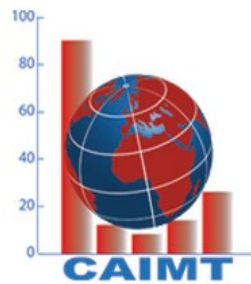
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Relativity of Carbonaceous Meteorites and Comet Dust for Processing Biological Composition (Micro Fossils): A Review on Metamorphic and Sedimentary Petrology of Polonnaruwa (Sri Lanka) Meteorite Stone

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The study chronicles a series of landmark events of Polonnaruwa Arnaganwila, dry zone of Sri Lanka carbonaceous meteorites that impacted on 29th December 2012. The main objective of this study was to compile the cited articles for creating a plausible corresponding model to possess the sedimentation of Micro Fossils (Fossil diatoms) found in carbonaceous meteorites. As such, the sampling data of Polonnaruwa stones were investigated using diverse tools and methods. i.e., ICP-OES, GC-MS, SEM, EDAX, CHN, FTIR, Raman Spectroscopy, XRD. The Optical Spectroscopy was adapted as a second major objective to interpret the physical, chemical, mineral properties of stone including oxygen isotope, crystalline and biological composition. Geologic age of the stones was determined by N/C atomic ratio depletion (N/C ARD) technique. Results showed that the Polonnaruwa stone comprised of high porous minerals including Si-K-rich, Al-depleted, amorphous melt enclosing trace (commonly <1 μ m) anorthoclase, albite, anorthite and quartz. Additionally, it was recognized that bound H₂O < 0.03wt% originated from hypervelocity impact. SEM analysis revealed that several fossil microorganisms similar to acritarchs, hystricho spheres and diatoms were represented. Geologic age of the stones was recognized as at least ~300 Ma by N/CARD. Triple oxygen isotope analysis provided the values of $\Delta 17O = -0.335$ with $\delta 17O = 8.978 \pm 0.050$ and $\delta 18O = 17.816 \pm 0.100$ which indicated constituents of non-terrestrial sources. To conclude, our model was significantly supportive for providing a gradual series of meta-metamorphic to sedimentation that has processed the numerous of condition for stability of microfossil in carbonaceous meteorites.

Key Words: Meteorites, Micro fossils (diatoms), Sedimentation Petrology, Sri Lanka

