

ARALAGANWILA STONY MATERIAL: FUSED SOIL OR EXTRATERRESTRIAL?

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On 29th December 2012, some stony materials were found by villagers in Aralaganwila, located close to the city of Polonnaruwa in Sri Lanka. Most of these materials were spread over a flooded paddy field when these were found. However, some scientists claimed that these stony materials are of extraterrestrial origin with full of fossilized microscopic biogenic constituents that provide strong evidence for the panspermia hypothesis. These extraordinary materials were studied in detail along with the soils in the paddy field where these materials were found. Visual and microscopic observations, XRD and XRF analyses and detailed investigations on diatoms in samples and host soils were carried out. None of the physical properties of these materials, such as magnetic properties, density, match with any known meteorite. Most of the fragments are extremely lightweight and porous. The density of the material is less than 1.0 g/cm³. All known types of meteorites (stony, stony-irons and iron) showed the average density between 2.11 to 8.0 g/cm³. Mineralogical analyses indicated that samples contained mostly amorphous silica with crystalline quartz and anorthite. The chemical analysis showed that K (30-35 %), Ca (20-35%), Fe (2- 15%) are the dominant constituents in stony samples that mostly are similar to the soils in the vicinity. Many fossilized remnants of plant materials including rice seeds were also found inside the domains of amorphous silica. Diatoms found in these suspected samples and soil samples clearly illustrate their similarities. Common fresh water terrestrial diatoms such as species of *Pinnularia*, *Cymbella*, *Nitzschia* and *Hantzschia* were found in both stony materials and soils. *Pinnularia sp.* which grows mostly in clean water was the most abundant algae in Aralaganwila samples. Although a controversy shocked the media on Aralaganwila extraordinary stony materials, investigations clearly indicate that these materials are not fragments of meteorites but stony fragments formed from terrestrial materials probably fused due to lightning strikes (fulgurite) during the northeast monsoon.