**Supplementary material #2**

**Microstructures observed in meteorite samples**

Several microscopic particles of complex texture have been observed in many meteorite samples [44-52]. The nature of these organized elements is still unknown and requires detailed analysis.

In this regard, our results on microstructure identified in shock processed amino acids show the possibility of forming these structures in those meteorites when they are subjected to the impact-induced shock events.

Comparison of these structures to the similar structures in the meteorite is shown below,

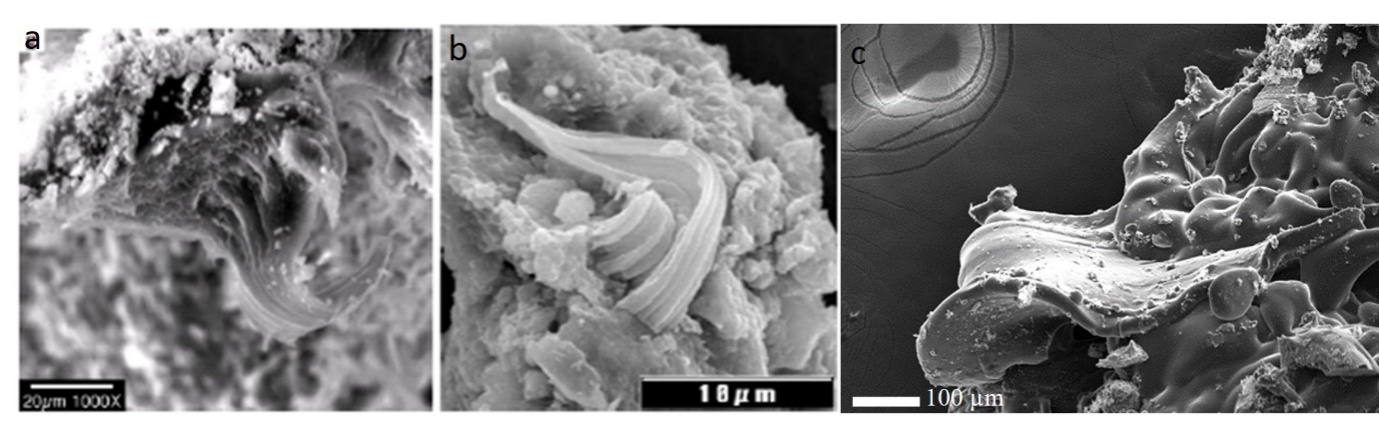
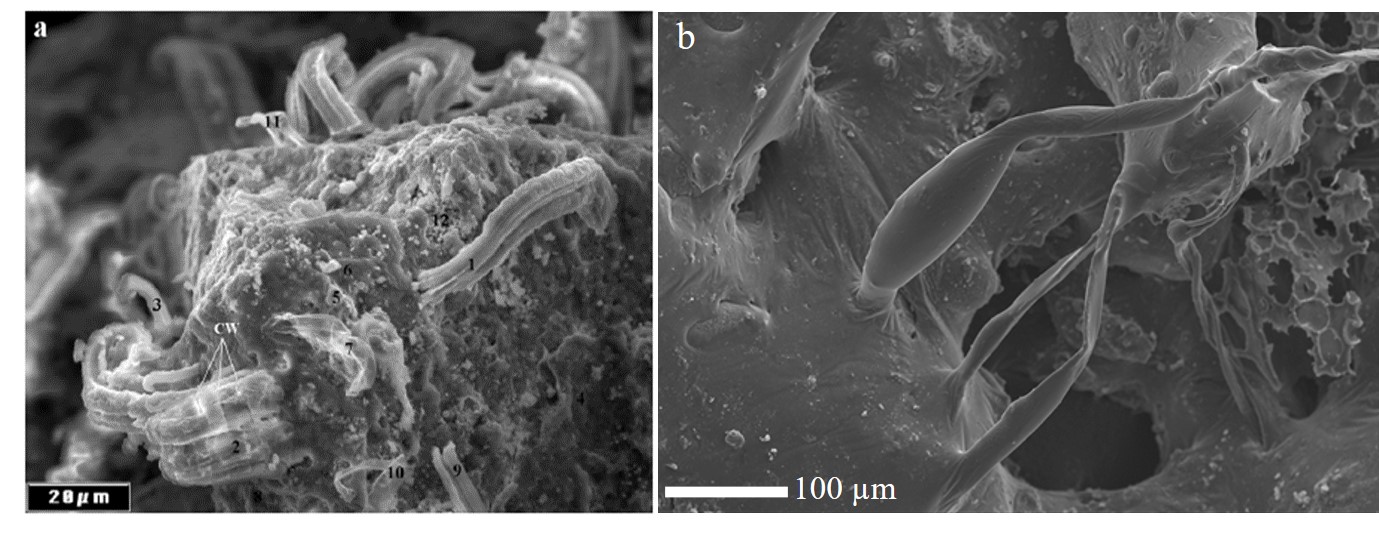
Figure S9: (**a**) Shows embedded filaments in freshly fractured fragment of Orgueil meteorite [54] (**b**)Embedded filament observed in shock processed 18 mixtures of amino acid.

Figure S10: Microstructures observed in (**a**) Murchison meteorite, (**b**) Orgueil meteorite sample [53] (**c**) Folded sheet found in shock processed residue of amino acid glycine

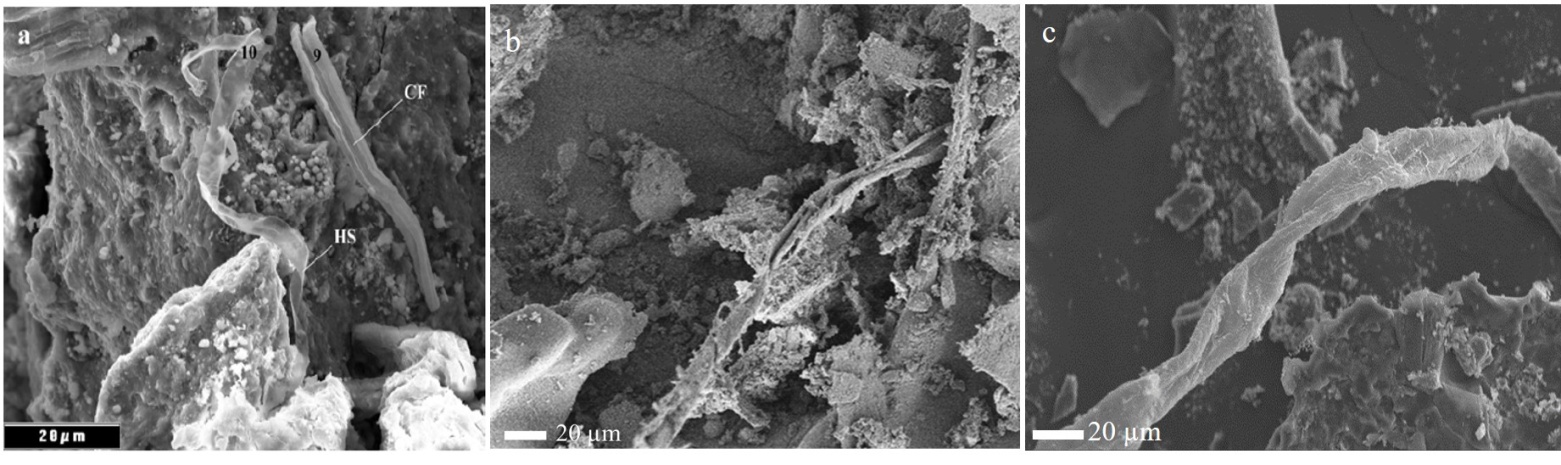


Fig S11: (**a**) Helical filament 10, collapsed filament 9, in Orgueil meteorite [54] (**b**) Similar collapsed filament observed in after shock processing of glycine residue (**c**)Twisted filament in glycine residue similar to filament10.