large quantity of Lewis acid in the pitch matrix impedes the normal development of the mesophase spherules. The polymerization reactions are accelerated and numerous. In some areas of the sample, untypical anisotropic domains are formed instead of the spherules (Fig. 3a).

All these observations confirm the fact that the presence of the Lewis acid (free or intercalated into the graphite) has a great influence during the mesophase spherules formation and development. Indeed, in the case of anthracene carbonization in presence of HF/BF_3, Mochida *et al* [13] showed that mesophase spherules can be assumed catalytically formed. This study shows that the mesophase spherules can be the privileged site where a metallic element can be trapped. Such inclusions inside the mesophase spherules have never been reported in the literature, and it is actually difficult to know if the Lewis acid acts during the germination process or the spherule coalescence phase. However, another important observation is that the graphite agglomerates during the pyrolysis, and also traps the QI particles which are usually located around the mesophase spherules. A more systematic step by step study while the carbonization is in progress should lead to a better understanding of the phenomenon.

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Concerning fullerenes in shungite

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Following our initial report of the detection of fullerenes in a geological sample [1] there have been several other discoveries of naturally occurring fullerenes[2-6]. Although there is now evidence for fullerenes in a variety of geological materials, they seem only to occur at concentrations so low that highly sensitive analytical techniques are needed for their detection and verification. The report of fullerenes in shungite in particular has provoked both considerable interest and discussion [7-9].

Laser-desorption mass spectrometry (LD-MS) has proven to be invaluable for studying fullerenes; however, care needs to be taken when this experimental method is used to **detect** fullerenes in a sample. It has long been known that fullerenes can be **created** under certain conditions by laser irradiation of carbonaceous materials [10-12] (in fact, this was the method with which fullerenes were first synthesized and detected [13-14]). A recent report suggests that fullerenes can be created in shungite by the laser-desorption process (even at low energies) used with mass spectrometry detection [15]. The authors in that report state that, based on their laser-desorption mass spectrometric results, they believe there is no evidence for naturally occurring fullerenes in shungite. In response to those comments, we wish to clarify some of the experimental details and results of our original report of fullerenes in shungites.

We were well aware of and in fact pointed out the possibility of altering the samples by laser-desorption when we performed our experiments; therefore using raw, unprocessed chips of shungite, we took several precautions:

1. Low irradiance ($< 10^7$ W/cm^2) negative-ion laser-desorption mass spectrometry was utilized in all cases. Experience in our laboratory has shown that this

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