

**BIOMORPHS IN CARBONACEOUS CHONDRITES.** A. Yu. Rozanov<sup>1</sup> and R. B. Hoover<sup>2</sup>, <sup>1</sup>Palaeontological Institute, Russian Academy of Sciences, Profsoyuznaua 123, Moscow, 117647, Russia, aroza@paleo.ru <sup>2</sup>Space Sciences Laboratory, ES-82, George C. Marshall Space Flight Center, Huntsville, AL 35812, USA, richard.hoover@msfc.nasa.gov

During some last years the meteorites – Murchison, Efremovka, Murray, Nagoya etc. – was studied by us in order to detection of biomorphic structures in them. In MSFS and Palaeontological Institute RAS by electron scanning microscopes with microanalyzers a new splits of samples were analyzed. Practically in all carbonaceous chondrites, mainly of • • group, the bodies of a fossil bacterial habitus, and in some cases also nanobacteria were found.

The first important results was obtained simultaneously in Moscow and Huntsville (Alabama) on the materials from Murchison (Zhmur et. al., 1997; Hoover, 1997). It is necessary specially to pay attention that the founded biomorphs have a micronic dimension (instead of nm) and oppositions which have been put forward against interpretation by McKay of a Mars material (McKay et. al., 1996), there is no related to objects from Murchison.

In Murchison was founded the objects similar *Microcoleus* and *Mastigocladus*, and other forms.

In Mighey meteorite was discovered pipes and saccular forms, also spherical and spherical with outgrowths forms. All of them has a micronic size. These structures cannot unequivocal be compared to any concrete microorganisms. However, by morphology, probability that we deal with pseudomorphes of different kinds of bacteria, is rather great. Probably, the heightened contents of sulfur can to give some basis for reference many from the pointed formations to fossilized sulphur bacteria.

There was founded also saccular forms. In the first case it is a rather large form by lengthy not less 20-25 mkm at the diameter 8-9 mkm in the most wide part. The width gradually decreases to a cone like form. The thin end is, probably, rounded. The chemical composition specifies by the small contents Fe. The basis makes by Mg and Si. In the second case it is a rounded saccular vessel with a curved necks. Diameter

of sack is 11-12 mkm, diameter of neck about of 2,5 mkm. As soon as there was found the only exemplar, it is very difficult to be sure in its true form. However, if the morphology is perceived by us correctly, probably, it is necessary to search for analogues of this form among extremophiles similar *Cryptococcus*.

The group of quite other morphological type of objects closely reminding frequently described recently as nanobacteria, represents, probably, greatest interest. It is spherical formations of "cells" by the size 200 nm - 1mkm, found out by groups. They often form the accumulations of some pieces or "colonies" of tens exemplars. In some cases are observed diplococcs or divided "cells". Chemical composition rather usual for matrix of meteorites. A basis of minerals compose, the most probably, olivine and troilite.

Thus, we can ascertain that in a Mighei meteorite, probably, it was possible to find out a rather specific complex of biomorphic structures, which differs from a number of other meteorites (Murchison, Efremovka, Allende), by the smaller sizes of objects and by presence, it is enough probable, nanobacteria.

Three subsequent examples: meteorites Murray, Allende and Nagoya, first of all is specify with the high contents S in them, and in a number of cases there is a substantial suspicions on presence of sulfur not only in troilite, but also in the pure state.

It is much more and of more strange data is obtained on a meteorite Nagoya. The numerous sausage-shaped forms, connected frequently to cloud-shape or saccular origins, were detected.

The set of microfossils met in meteorites shows, that it were not the separate microorganisms, but the communities, part of which was similar to cyanobacterial mat. These communities, the most probably, took part in formation of carbonaceous matter of the studied meteorites.