

**LABORATORY FOR GEOCHEMISTRY,
COSMOCHEMISTRY AND ASTROCHEMISTRY MARKS
THIRTY YEARS OF SCIENTIFIC RESEARCH**

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The Laboratory for Geochemistry, Cosmochemistry & Astrochemistry (LGCA), Department of Inorganic Chemistry (Faculty of Science, University of Niš) was established on September 18th, 1978 and to its title Cosmochemistry was added during 1986 when the research team of this Laboratory started to study geochemical problems related to the meteoritic impacts of the Earth's surface. Astrochemistry (as a part of the Laboratory title) was attached during 2001 when we instigated an investigation related to the thermochemistry in the Sun Nebula.

A number of competent scientific institutions and individuals in Europe consider the Laboratory as one of the most fruitful in Southern Europe, especially in the field of the geochemistry of vanadium (and other trace metals) and organic free radicals in ancient sedimentary rocks and fossil fuels.

LGCA, in rather difficult circumstances, has been maintaining a high quality profile of its research. Indeed, a number of research articles were published in respected journals: *Geochimica et Cosmochimica Acta* (1978, 1984, 1986 and 1993), *Organic Geochemistry* (1993, 2002), *Naturwissenschaften*, *Earth and Planetary Science Letters* (2000), *Fuel* (1997, 1998, 2000, 2001 and 2002), *Journal of Petroleum Geology* (1998), *Journal of the Impact Engineering* (2003) and *Bulletin de la Societe Geologique de France* (2007). In addition, two highly cited papers were published related to chemistry of organic free radicals in biology and medicine in *Science* and *Journal of Biological Chemistry*. The above journals are undoubtedly the leading in their scientific disciplines. LGCA has also published papers in numerous proceedings of international geochemical meetings. Of course, such research efforts have been noticed by the international scientific community. Scientific works of LGCA are cited over 500 times in the university textbooks, scientific reviews and papers.

From 1977 to 1993 LGCA was mainly involved on the research projects related to geochemistry of trace metals in ancient sedimentary rocks (including fossil fuels) and geochemical study of petroleum and petroleum source rocks.

In 1980 Alvarez and his co-workers reported experimental evidence that a single large asteroid impact occurred in the late Cretaceous and this impact was probably largely responsible for one of the greatest biological extinctions in the Earth history. During 1980-s, LGCA turned mainly its research efforts to geochemistry of trace metals in the Cretaceous-Paleogene boundary (KPB) sediments from Denmark. One of the most attractive findings in this research was identification inorganic vanadyl ions and copper porphyrins in the KPB layer of Fish Clay (Denmark). LGCA has also investigated the KPB sediments from Italy, Spain, USA, Tunisia, Slovenia and southern Atlantic (Oceanic Drilling Project).



Figure 1: A small crater of "unknown" origin on Suva Planina and research team of LGCA.

Recently, LGCA centered its research to the four exciting research projects: origin of oxygen of the Earth's atmosphere, thermochemical study of asteroid and cometary impacts into ocean, global acidification of the ocean at the Cretaceous-Paleogene boundary and the thermochemical processes in the Sun Nebula.

Very recently, LGCA are making the preliminary steps to investigate a small crater on Zdrebica (Suva Planina) of yet "unknown" origin (Fig. 1), three non-active volcanoes Oblik and Grot near the town of Vranje and Kotlenik near the town of Kraljevo, and "mysterious" stone balls found near the town of Priboj.

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For years, LGCA have been cooperating with the following research institutions: outside Serbia - Laboratoire de Mineralogie-Cristallographie (now Institut de Minéralogie et de Physique des Milieux Condensés), Universités Pierre et Marie Curie, Paris, France and Faculty of Earth Sciences, University of Silesia, Sosnowiec, Poland; and in Serbia - Institute of Nuclear Science, Vinča.