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*Att: Committee for the defense of doctoral dissertation*

Dear Colleagues,

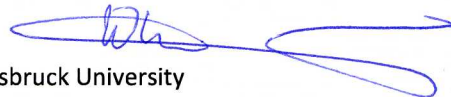
I have had a chance to read the Outline of the D.Sc. dissertation (Autoreferat) of Olga Ivanovna Kadebsakaya entitled "Mineral and geochemical indicators of natural processes in subterraneous karst landscapes of Ural". The Outline has structure, format and style of presentation that are required for these documents. It begins with formulation of research questions, then proceeds to review the methods/approaches used to address them, and finally presents the major results obtained in the process. In my view, the results of Olga Kadebskaya significantly advance several fields of karst research and adjacent disciplines. Among those fields are:

- cryogenic cave mineralization as a tool for reconstructing paleo-permafrost extent during Quaternary glaciations;
- genetic aspects of "non-traditional" mineralization processes in caves, related to low temperatures;
- phosphate mineralization processes in caves;
- geochemical (including isotope) particularities of cryogenesis on caves.

Importantly, these aspects, being predominantly mineralogical and geochemical in nature are intimately tied to, and serve as indicators of the geographic conditions, including longitudinal location (zonation) of caves in Ural Mountains, as well as modern- and paleo-climate of Northern Eurasia. Additional consideration is given to cave microclimate as a driver of the short-temporal scale cryogenesis in caves. Recognition of the unusual geochemical processes occurring in caves provide an added value when considering inclusion of caves and cave landscapes in programs of nature protection and preservations at different levels.

It is my opinion that dissertation of O.I. Kadebskaya fulfills the requirements of a D.Sc. dissertation.

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**Confirmation:**

This review of the "Outline of the DrSc dissertation" by O.I. Kadebskaya was prepared at the Institute of Geology, Innsbruck University

Director of the Institute ao. Univ.-Prof. Dr. Diethard Sanders

