

CHEMICAL CLASSIFICATION OF CENTRAL EUROPEAN TEKTITES (MOLDAVITES)

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200 years of investigation have linked the formation of moldavite tektites to the Ries impact event (14.87 ± 0.36 Ma). The chemical variation and distribution of the moldavites follow certain rules. They occur in distinct regions (substrewnfields) 200 and 450 km in E and NE direction in the Czech Republic, in Germany and Austria. Based on their geographic distribution and chemical composition, the Central European strewnfield has been divided in several subfields. A database of major and trace element data of more than 200 specimens allows us to classify the glasses into: Normal moldavites with SiO₂ 76-80 wt% and CaO/MgO about 1.3 including the Bohemian types (with MgO 1.5, CaO 2 wt%) and Moravian types (with MgO 1.5, CaO 2 wt%); HSi moldavites, which are common in the Radomilice subfield with 80 wt% SiO₂; HFe moldavites with typically 2.5 wt% FeO and 77 wt% SiO₂; HCa/Mg moldavites with CaO/MgO 2; LCa/Mg moldavites with CaO/MgO 0.5 and Muong Nong-type moldavites of bimodal composition. Especially the large Bohemian subfield contains tektites of divers composition and covers a large range in elemental abundances and ratios. The composition of Moravian moldavites display higher amounts of TiO₂, Al₂O₃, FeO, Na₂O, K₂O, and lower amounts of MnO, MgO, CaO as well. The German moldavites (Lausitz region) cover the compositional range of normal Bohemian and Moravian type moldavites. The chemical variation of moldavites and the isotopic composition is explained by incomplete mixing of three components: a carbonate-, a clay- and a silica-rich component of surficial material during impact.