The samples (polished thin-sections of rocks and separated heavy fraction) were analysed using hot cathode equipment HC2 – LM, Simon Neuser, Bochum. Zircons, monazites, apatites, quartz, feldspars and carbonate cement were chosen for CL-observations.

Among the zircon population we were able to identify eight types of zircons. They were as follows: 1) euhedral simply oscillatory zoned grains (which were the most frequent type), 2) crystals containing inclusions of non luminescent mineral in the central part of the grain, 3) two-stage zircons with the brightly luminescent oscillatory zoned core and dark oscillatory zoned margins, 4) patchy zoned, 5) corroded zircons, 6) blue zircons with a yellow rim-probably xenotime, 7) zircons with a very complex internal fabric, 8) non luminescent. Monazites were dull blue in CL. They were usually unzoned or, rarely, displayed sector zoning.

Most common apatites were yellow and unzoned, only few grains exhibited blue CL. Some grains were overgrown by a violet or pinkish zone.

If quartz grains are considered, five types of them could be distinguished in the analysed material: 1) most typical dark blue, 2) bright blue, 3) violet, 4) dark brown, 5) non luminescent.

Most feldspar grains, as they were very often altered, didn't display luminescence. Fresh plagioclase grains luminescent in green-yellow colour while K-feldspars were usually bright blue.

Carbonate cement filled holes between clastic grains, corroded them or formed thin veins. Three types of carbonate cement were observed. The oldest generation, probably dolomite, displayed dull red luminescence. The middle stage carbonates were characterised by dull orange CL colour, whereas the youngest were bright orange in colour.

Because the majority of zircons display magmatic zoning the source rock could be traced in magmatic rocks. Anyhow, the patchy zoning and resorption may indicate the metamorphic overprinting. The xenotime overgrowths are probably the effect of diagenetic processes in sediments. The most common blue luminescent quartz point to plutonic rocks e.g. granites or high-grade metamorphic rocks (Götze et al., 2001) and the presence of red-violet quartz grains and very fine-grained fragments of felsic volcanics, visible in thin sections, indicate that volcanics, e.g. rhyolites, contributed to the clastic material as well. On the base of the CL study the source area could be interpreted as highly variable, built of various magmatic and metamorphic rock types.

The three generations of carbonates indicate that the cementation was a multi-stage process when carbonates were gradually replacing the primary clay matrix.

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Vienna Basin and Adjacent Tectonic Units: Structural-Tectonic Elements Mapped by Means of the Gravimetry

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The unified processing of the gravity data in the Vienna Basin and adjacent geologic units (Flysh Belt, Neogene Foredeep, Klippen Belt, Carpathian and Alpine Calcareous Zone and the Central Zone) has been carried out in 2000. The primary gravity data originating from several data sources has been transformed into S-42 Coordinate System, Adriatic Altitude System and Absolute Gravity System. The data consisting of 96,487 gravity points of the territory of the Czech Republic, Slovakia and Austria has been reprocessed in the area of 16,790 km^2. After calculating Bouguer gravity anomalies by formulas according to Švancara (1996), final regular 250 m grid in the area has been generated. The following gravity maps were constructed:

- Bouguer gravity
- Regional gravity
- Residual gravity
- Horizontal gradient of gravity
- Vertical gradient of gravity
- Second vertical derivative of gravity
- Density boundaries indications (Linsser method)

Subsequently, there were also several illuminated gravity images and combined gravity and terrain elevation relief maps generated. These maps, depicting gravity effects of the Tertiary fill of the Vienna Basin as well as structural-tectonic features of the surrounding and uderlying geological units, gives an outstanding example how can pull-apart basin geology be mapped by geophysics. The set of gravity maps, together with the existing seismic and drilling knowledge, could bring new information on structures prospective for hydrocarbons in this petroliferous area.

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