

plagioclases population (we consider the second plagioclase generation) has an albitic composition typically range between An 3% and An 8%. This albite is found in all the rock types from monzodiorite to syenite or nepheline syenite. The albite surrounds all other plagioclase crystals and edits the contact contour of early crystals.

The albite (the second generation of plagioclase) is in a microcline, perthite and sometimes nepheline association while the calcium plagioclase is in a hornblende, sphene and sometimes pyroxene association.

The process of reorganization of first plagioclase feldspars generation is developed to a high temperature level (between the “liquidus” and “solidus” lines of crystallizations diagram) so here an open system evolution process as magma mixing is. The existence of the high plagioclases (plotted on, or near the high temperature curves of the standard stereogram used in US determination) also the existence of the zoning structures, show that the process can not be a metasomatic one.

## **Measurements of personal UV doses at different human activities**

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Ultraviolet (UV) solar radiation plays a very meaningful role in many processes in the atmosphere and biosphere, strongly affecting life on the Earth, and human health in particular. A long term overexposure to UV radiation may cause photoaging, suppression of immune system, skin cancer and cataracts. On the other hand, UV radiation is required for vitamin D<sub>3</sub> synthesis and its lack may lead to rickets and other diseases.

Standard measurements of UV radiation are performed with the aid of radiometers situated on the roofs of buildings or masts at the uncovered places, put out directly to the Sun. Data from these measurements are used as a measure of UV radiation influence on human being. Nevertheless, the human body is not a stationary flat surface put out directly to the Sun, so doses of UV radiation obtained from standard measurements do not describe the total UV doses absorbed by human body.

The main objective of this study is to present the results from the comparison of stationary measurements of personal dosimeters Gigahertz-Optik X2000-10 and Solar Light UV-Biometer, and results of measurements of personal UV doses at different human activities. Both meters are designed to measure the erythemal UV radiation.

The comparison of personal dosimeters Gigahertz-Optik X2000-10 and Solar Light UV-Biometer was performed at Legionowo, at different solar zenith angles (SZA) and total ozone (TO). For comparison the reference Solar Light radiometer SL 935, calibrated during international comparison campaigns, was used. The results of dozens measurements at SZA in the range 25-65° and TO from 274 DU to 339 DU, showed a significant dependence of dosimeters correction factor from solar zenith angle.

The measurements of personal UV doses at different human activities have been performed in the Tatra Mountains, during a few excursions at altitude 1000-2000 m above sea level. Measurements were performed simultaneously by two persons and the detectors were fixed on their arms. Personal UV doses were compared with daily doses of UV radiation measured by Solar Light radiometer situated at the IMWM station in Zakopane (855 m a.s.l.). Personal UV dose absorbed by human body during 7-8 hours mountain excursion in clear day is approximately 50% less than daily dose of UV radiation measured by Solar Light radiometer.

Other measurements took place in the eastern part of Poland, during a walk with a child. One detector was fixed to the baby carriage, the other on the arm of the baby-sitter. Detectors fixed to the baby carriage measured the UV dose 50% greater than the other.