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# DACITE

from the type-locality

POIENI, Vlãdeasa Massif, ROMANIA



# DACITE FROM TYPE LOCALITY: GENEALOGY AND DESCRIPTION

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**DACITE** is one of the fundamental volcanic rock types beside basalt, andesite and rhyolite - of the calc-alkaline igneous series. It occurs worldwide, as a common petrotype in continental or island arc volcanic settings.

The rock name **DACITE** derives from **DACIA**, the Roman name for the actual Romanian territory.

The term **DACITE** was introduced in the scientific literature by the Austrian geologist Guido Stache, and firstly used in the book Geologie Siebenbürgens (The Geology of Transylvania) of F.v. Hauer and G. Stache, Wien, 1863, pages 56 - 72. The reason to designate a new igneous rock type was to discriminate between the orthoclase-phyric and plagioclase (i.e. oligoclase)-phyric rocks of the "quartz-trachytic" group (today's calc-alkaline series), so that the oligoclase-bearing rocks (dacites) be distinguishable from the orthoclase-bearing rocks (rhyolites) on petrographic grounds. The term was then generally assumed in the petrographic literature (Johannsen, 1958). The modern definition of DACITE is based on chemical diagnosis in QAPF (Streckeisen, 1978), K<sub>2</sub>O vs. SiO<sub>2</sub> or K<sub>2</sub>O+Na<sub>2</sub>O vs SiO<sub>2</sub> (Peccerillo and Taylor, 1976, Le Maitre et al., 1989) diagrams (e.g. 63-69% SiO<sub>2</sub>, 1.2-3.1% K<sub>2</sub>O).

The **TYPE-LOCALITY** of **DACITE** is **Gizella quarry** located along the Crişul Repede river, near the village of **POIENI**, Vlădeasa Mts. in the northern Apuseni Mountains, Romania (Fig.1). Upper Cretaceous (Maastrichtian) to Paleogene (Paleocene) igneous rocks crop out in the old quarries - now merged in a single huge modern quarry - on the southern river-side (Fig.1). They consist of effusive dacites pierced by intrusive porphyritic microgranodiorites.

The DACITES from the type-locality are dark-grey to black in colour, consisting of small phenocrysts (0.1-3.0 mm) of quartz, zoned and twinned plagioclase feldspar (26-49 % An), hornblende, biotite and sparse pyroxene (both augite and hyperstene) floating in a glassy-microcrystalline groundmass. In contrast, the porphyritic microgranodiorites are lighter-coloured (grey), including larger phenocrysts (1-8 mm) of plagioclase feldspar, quartz, hornblende,

biotite and occasionally orthoclase, embedded in a microgranular groundmass of interlocked quartz and K-feldspar. In his original description, Stache did not distinguish between the two rock types. Ştefan (in Cioflica et al., 1973) has recognised the intrusive origin of the lighter-coloured and coarser-porphyritic rock-type, discarding it from the category of dacites.

The modal composition, as well as the major and trace element compositions of a typical **DACITE** from the type-locality are given below (Tables 1 and 2).

Component	mm	%
Plagioclase	3.10/1.60 - 0.20/0.10	30.08 - 40.59
Quartz	2.10/1.20 - 0.07/0.05	4.61 - 7.96
Amphibole	1.20/0.50 - 0.20/0.05	2.27 - 4.28
Biotite	2.70/0.90 - 0.20/0.05	2.43 - 4.88
Pyroxene	1.50/0.50 - 0.50/0.20	0 - 4.28
Opaque minerals	0.20/0.20 - 0.05/0.05	0.58 - 1.10
Apatite	0.50/0.10 - 0.05/0.05	0.06
Zircon	0.10/0.05 - 0.05/0.05	0.70
Groundmass		42.31 - 54.44

# TABLE 1Modal composition of the Dacite<br/>(Ştefan, 1980)

### TABLE 2

Major and trace element composition of the Dacite (Ștefan et al., 1992)

Major element	%	Trace element	ppm
SiO <sub>2</sub>	65.90	Pb	12
TiO <sub>2</sub>	0.62	Cu	10
$Al_2O_3$	15.70	Zn	64
Fe <sub>2</sub> O <sub>3</sub>	3.96	Ga	13
FeO	0.51	Ni	14
MnO	0.06	Со	8.5
MgO	1.87	Cr	17
CaO	4.10	V	67
Na <sub>2</sub> O	4.00	Sc	9.5
K <sub>2</sub> O	2.46	Zr	130
P <sub>2</sub> O <sub>5</sub>	0.20	Yb	2.4
LOI	0.51	Y	29
Total	99.91	Sr	280
		Ba	1100
		Rb	110
		Nb	20.5
		U	3.7
		Th	10.8
		La	27
		Ce	43
		Sm	2.9
		Eu	1.12
		Tb	0.90
		Hf	6.5



Fig.1 Sketch-map of the Poieni area with the type-locality (Gizella quarry) of DACITE. Inset shows location in Romania. 1: Alluvia; 2: Fluvial terrace deposits; 3: Dacites; 4: Porphyritic microgranodiorites; 5: Metamorphic rocks; 6: 1973 outline of the quarries and the site in Gizella quarry where the term DACITE has been defined; 7: 1996 outline of the quarries.



Fig.2 Photomicrograph (crossed nicols) of a typical Poieni dacite with quartz (q), plagioclase (pl), biotite (bi) and amphibole (am) phenocrysts.

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