CLASSIFICATION PLOTS

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
AFM (Irvine + Baragar 1971)	AFM	G	(Na_2O+K_2O) – FeOt – MgO ternary	AFM plot that serves to discriminate between calc-alkaline and tholeiitic subalkaline series (Irvine & Baragar, 1971).
SiO2 - FeOt/MgO (Miyashiro 1974)	Miyashiro	G	SiO_2 vs. FeOt /MgO binary	Diagram of Miyashiro (1974) distinguishing between tholeiitic and calc-alkaline igneous rocks.
SiO2 - K2O (Peccerillo + Taylor 1976)	PeceTaylor	G	SiO_2 vs. K_2O binary	Diagram proposed by Peccerillo & Taylor (1976) to distinguish various series of tholeiitic, calc-alkaline and shoshonitic rocks.
Co - Th (Hastie et al. 2007)	Hastie	G	Co vs. Th	Replacement for the previous plot of Peccerillo & Taylor (1976) using less mobile elements, designed by Hastie *et al.* (2007).
Molar Na2O – Al2O3 – K2O plot	NaAlK	G	Na_2O – Al_2O_3 – K_2O ternary	Diagram to distinguish meta-/peraluminous from peralkaline rocks as well as potassic, sodic and ultrapotassic suites.
A/CNK - A/NK (Shand 1943)	Shand	G	$Al_2O_3/(CaO+Na_2O+K_2O)$ vs. $Al_2O_3/(Na_2O+K_2O)$ (mol. %)	Classic A/CNK vs A/NK plot of Shand (1943) discriminating metaluminous, peraluminous and peralkaline compositions.
TAS (Le Bas et al. 1986)	TAS	V	SiO_2 vs. $(Na_2O + K_2O)$ binary	The principal variation of the TAS diagram, as proposed by Le Bas *et al.* (1986) and codified by Le Maitre (1989). Dividing line between alkaline and subalkaline series is that of Irvine & Baragar (1971).
TAS (Cox et al. 1979)	CoxVolc CoxPlut	V P	SiO_2 vs. $(Na_2O + K_2O)$ binary	Variation of the TAS diagram proposed by Cox *et al.* (1979) and adopted by Wilson (1989) for plutonic rocks.
TAS (Middlemost 1994)	TASMiddlemostVolc TASMiddlemostPlut	V P	SiO_2 vs. $(Na_2O + K_2O)$ binary	Variation of the TAS diagram proposed by Middlemost (1994).
Jensen (1976)	Jensen	V	Al – $(Fe^t + Ti)$ – Mg ternary	Ternary plot of Jensen (1976).
R1-R2 (De la Roche et al. 1980)	LarocheVolc LarochePlut	V P	R_1–R_2 binary (in millications).	Multicationic classification plot of De La Roche *et al.* (1980) (R_1: 4Si - 11(Na + K) – 2(Fe + Ti); R_2: 6Ca + 2Mg + Al).
Nb/Y - Zr/TiO2 (Winchester + Floyd 1977) Zr/TiO2 - SiO2 (Winchester + Floyd 1977)	WinFloyd1 WinFloyd2	V	log Nb/Y vs. log Zr/TiO_2 log Zr/TiO_2 vs. SiO_2 binary	Diagrams proposed by Winchester & Floyd (1977) for classification of volcanic rocks using incompatible element ratios.
Nb/Y - Zr/Ti plot (modified by Pearce 1996)	Pearce1996	V	log Nb/Y vs. log Zr/Ti	The log Nb/Y vs. log Zr/TiO_2 plot of Winchester & Floyd (1977) modified by Pearce (1996).
QAPF diagram (Streckeisen 1978)	QAPFVolc	V	QAPF – modal compositions	Modal QAPF diagram of Streckeisen (1978)
QAPF diagram (Streckeisen 1974)	QAPFPlut	P	QAPF – modal compositions	Modal QAPF diagram of Streckeisen (1974)

[1]Scope: G: general diagram, V: designed for volcanic rocks, P: designed for plutonic rocks

CLASSIFICATION PLOTS *(CONTD.)*

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
Feldspar triangle (O'Connor 1965)	OConnorVolc OConnorPlut	V P	Ternary plot Ab-An-Or	Classification diagram after O'Connor (1965) for silica-rich rocks (quartz > 10 %). It is based on CIPW-normative (volcanic, plutonic rocks) or modal (plutonic rocks) contents of albite, anorthite and K-feldspar.
P-Q (Debon + Le Fort 1983)	DebonPQ	P	P–Q binary (in millications)	Nomenclature diagram of Debon & Le Fort (1983). Its coordinates correspond to proportions of Kfs and Pl to Qtz (P: K - (Na + Ca), Q: Si/3 - (K + Na + 2Ca/3)).
B-A (Debon + Le Fort 1983)	DebonBA	P	B–A binary (in millications)	The B–A diagram (Debon & Le Fort 1983) defines six sectors (I - VI), reflecting alumina balance of samples (B: Fe + Mg + Ti, A: Al - (K + Na + 2Ca)).
B-A plot (modified by Villaseca et al. 1998)	Villaseca	P	B–A binary (in millications)	The B–A diagram (Debon & Le Fort 1983) with fields of various types of peralkaline rocks as outlined by Villaseca *et al.* (1998)
Middlemost (1985)	MiddlemostPlut	P	SiO_2 vs. (Na_2O + K_2O) binary	Classification diagram of Middlemost (1985) for plutonic rocks.
(or+ab)-2Q-4an diagram (Enrique 2018)	Enrique	P	Ternary plot (Or + Ab)–2Q–4An	CIPW-normative ternary plot of Enrique (2018)
Q-ANOR diagram (Streckeisen + Le Maitre 1979)	QANOR	P	Q' = 100Qz/(Qz + Or + Ab + An) vs. ANOR = 100An/(Or + An) binary b	Q'–ANOR classification diagram of Streckeisen & Le Maitre (1979) based on improved granitoid mesonorm of Mielke & Winkler (1979).

[1]Scope: G: general diagram, V: volcanic rocks, P: plutonic rocks

GEOTECTONIC PLOTS

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
Batchelor + Bowden (1985)	Batchelor	Gr	R_1–R_2 binary (in millications)	R_1–R_2 diagram (De La Roche *et al.*, 1980) with geotectonic implications after Batchelor & Bowden (1985). (R_1: 4Si – 11(Na + K) – 2(Fe + Ti); R_2: 6Ca + 2Mg + Al).
Source diagram (Laurent et al. 2014)	LaurentSource	G	Ternary plot Al_2O_3/(FeOt+MgO), 3CaO and $5K_2O/Na_2O$ (all in wt. %)	Diagram to decipher possible sources of granitic magmas (Laurent *et al.*, 2014).
Maniar + Piccoli (1989)	Maniar	Gr	binary plots SiO_2 vs. K_2O, Al_2O_3, and FeOt/(FeOt+MgO); MgO vs. FeOt; CaO vs. FeOt+MgO; A/CNK vs. A/NK	Major-element based geotectonic classification of granitoids (Maniar & Piccoli, 1989).
Frost et al. (2001)	Frost	Gr	binary plots SiO_2 vs. FeO(t)/(FeO(t)+MgO) wt. %; SiO_2 vs. MALI (Na_2O+K_2O-CaO) ASI vs. A/NK	Major-element based classification of granitoids (Frost *et al.*, 2001).
Frost + Frost (2008)	Frost_2008	Gr	binary plots SiO_2 vs. FeOt/(FeOt+MgO) wt. %; SiO_2 vs. MALI (Na_2O+K_2O-CaO) SiO_2 vs. ASI, FSSI vs. AI	Major-element based classification of granitoids (Frost & Frost 2008)
A type granitoids (Whalen et al. 1987)	Whalen	Gr	binary plots Zr+Nb+Ce+Y vs. FeOt/MgO (Na_2O+K_2O)/CaO 10000×Ga/Al vs. (Na_2O+K_2O) (Na_2O+K_2O)/CaO, K_2O/MgO, FeOt/MgO, Zr, Nb, Ce, Y, Zn, Agpaitic index	Binary plots serving for distinction of A-type granitoid rocks after Whalen *et al.* (1987).
Pearce et al. (1984)	Pearce_granite	Gr	log(Y+Nb) vs. log Rb, log Y vs. log Nb, log(Ta+Yb) vs. log Rb, log Yb vs. log Ta	Trace-element based geotectonic classification of granitoids by Pearce *et al.* (1984).
Harris et al. (1986)	Harris	Gr	ternary plot Hf - Rb/30 - Ta×3	The diagram distinguishes among four types of collisional granites.
Sylvester (1989)	Sylvester	Gr	(Al_2O_3+CaO)/(FeOt+Na_2O+K_2O) vs. 100×(MgO+FeOt+TiO_2)/SiO_2	Diagram proposed by Sylvester (1989) to distinguish the alkaline collision-related alkaline granites.
Schandl + Gorton (2002)	Schandl	Gr	log Ta/Yb vs. log Th/Ta Ta vs. Th, Ta/Hf vs. Th/Hf Yb vs. Th/Ta	Discrimination of geotectonic environment of felsic volcanic rocks (rhyolites), proposed by Schandl & Gorton (2002). It is based on combination of four presumably little immobile trace elements (Ta, Yb, Th, Hf).

GEOTECTONIC PLOTS *(CONTD.)*

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
YbN vs. LaN/YbN (Martin 1986) TTG/adakite	LaYb	Gr	binary plot Yb_N vs. La_N/Yb_N	Diagram discriminating between adakitic (or TTG) and "ordinary" calc-alkaline rocks (Martin, 1986).
NbN - ThN (Saccani 2015)	Saccani	B	binary plot Nb_N–Th_N (NMORB-normalized values)	Detailed discrimination of geotectonic environment of basaltic rocks, proposed by Saccani (2015).
Verma et al. (2006) based on major elements	Verma	B	suite of five diagrams based on log-transformed concentration ratios of major-element oxides	Discrimination of geotectonic environment of ultrabasic and basic rocks (SiO_2 < 52 wt. %), proposed by Verma *et al.* (2006).
Agrawal et al. (2008), La, Sm, Yb, Nb, Th based	Agrawal	B	suite of five diagrams based on log-transformed concentration ratios of La, Sm, Yb, Nb and Th	Discrimination of geotectonic environment of ultrabasic and basic rocks, proposed by Agrawal *et al.* (2008). It is based on log-transformed concentration ratios of five trace elements (La, Sm, Yb, Nb, and Th), i.e., using four ratios ln(La/Th), ln(Sm/Th), ln(Yb/Th), and ln(Nb/Th).
Meschede (1986) Zr/4-2Nb-Y	Meschede	B	Zr/4 – 2Nb – Y ternary	(Meschede, 1986)
Mullen (1983) 10MnO-TiO2-10P2O5	Mullen	B	10 MnO – TiO_2 – 10 P_2O_5	(Mullen, 1983)
Pearce + Cann (1973)	Pearce_and_Cann	B	Zr – Ti/100 – 3 Y ternary, Zr – Ti/100 – Sr/2 ternary, log Zr – log Ti binary	(Pearce & Cann, 1973)
Pearce + Norry (1979)	Pearce_and_Norry	B	log Zr vs. log Zr/Y	(Pearce & Norry, 1979)
Pearce et al. (1977) MgO-FeOt-Al2O3	Pearce_et_al_1977	B	MgO – FeOt – Al_2O_3 ternary	(Pearce *et al.*, 1977)
Pearce (1982)	Pearce_1982	B	log Zr vs. log. Ti	(Pearce, 1982)
Shervais (1982)	Shervais	B	log Ti/1000 vs. log V	(Shervais, 1982)
Wood (1980)	Wood	B	Th – Hf/3 – Ta Th – Hf/3 – Nb/16 Th – Zr/117 – Nb/16	(Wood, 1980)
Hollocher et al. (2012) La/Yb vs. Nb/La La/Yb vs. Th/Nb	Hollocher1 Hollocher2	B	La/Yb – Nb/La La/Yb – Th/Nb	(Hollocher et al., 2012)
Pearce (2008) Nb/Yb - Th/Yb	PearceNbThYb	U	Nb/Yb – Th/Yb	(Pearce, 2008)
Pearce (2008) Nb/Yb - TiO2/Yb	Nb/Yb - TiO2/Yb	U	Nb/Yb – TiO_2/Yb	(Pearce, 2008)

GEOTECTONIC PLOTS *(CONTD.)*

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
Cabanis + Lecolle (1989) La/10-Y/15-Nb/8	Cabanis	U	La/10 – Y/15-Nb/8	(Cabanis & Lecolle, 1989)
Ross + Bedard (2009) Zr/Y-Th/Yb	Ross	U	Zr/Y – Th/Yb	(Ross & Bédard, 2009)
Müller et al. (1992) Potassic rocks binary	MullerKbinary	U		(Müller *et al.*, 1992)
Müller et al. (1992) Potassic rocks ternary	MullerKternary	U		(Müller *et al.*, 1992)
Ohta + Arai (2007) FMW weathering index	OhtaArai	U	Ternary plot F – M – W, see help	F-M-W diagram (Ohta & Arai, 2007) for chemical weathering in rocks.

USER-DEFINED PLOTS

Menu item	*Module name*	*Scope*[1]	*Plot description*	*Details (reference)*
Ta/Yb - K2O/Yb (Pearce 1982)	PearceDestructive1	U	Ta/Yb vs. K_2O/Yb binary diagram	(Pearce, 1982)
Ta/Yb - Th/Yb (Pearce 1982)	PearceDestructive2	U	Ta/Yb vs. Th/Yb binary diagram	(Pearce, 1982)
Nb/Y - Ti/Y (Pearce 1982)	PearceDestructive3	U	Nb/Y vs. Ti/Y binary diagram	(Pearce, 1982)
Al2O3/SiO2 - MgO/SiO2 (Paulick et al. 2006)	Paulick	UB	Al_2O_3/SiO_2 vs. MgO/SiO2 binary plot for mantle peridotites	(Paulick *et al.*, 2006)
K/(Na+K)-B (Debon + Le Fort 1988)	DebonKNaB	U	K/(Na+K) vs. B binary (in millications)	The K/(Na+K) vs. B (maficity) diagram of Debon & Le Fort (1988) for aluminous magmatic suites. It defines three associations based on the balance of the two alkalis, namely potassic, sodi-potassic and sodic.
Q-B (Debon + Le Fort 1988)	DebonQB	U	Q vs. B binary (in millications)	The Q (cation proportion of quartz) vs. B (maficity) diagram of Debon & Le Fort (1983) for aluminous associations. It defines three associations, reflecting maficity of samples: leucocratic, subleucocratic and mesocratic.
B-Mg.no (Debon + Le Fort 1988)	DebonBMgNo	U	B vs. Mg# binary (in millications)	Diagram of Debon & Le Fort (1983) of B (maficity) vs. Mg/(Fe + Mg) to distinguish magnesian and ferriferrous associations.
B-Q-F (Debon + Le Fort 1988)	DebonBQF	U	B–Q–F terary (in millications)	Diagram of Debon & Le Fort (1983) expresses balance of three main groups of rock-forming minerals, dark minerals (B), quartz (Q) and feldspars with muscovite (F).
Grebennikov (2014) 5Fe2O3t - Na2O+K2O - 5(CaO+MgO)	Grebennikov	Gr	$5Fe_2O_3t$ – Na_2O+K_2O – 5(CaO+MgO) ternary	Plot of Grebennikov (2014) serves for classification of A-type granites and related felsic volcanic rocks (SiO_2 > 67 wt.%)

[1]Scope: Gr: granitoids, B: basaltoids, UB: ultrabasic rocks, U: (moreless) universal (appropriate for a range of compositions).

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