Type of synthesis or treatment	Sample	Nature	Colour	Method	$\delta^{18}O$ (‰, V-SMOW)	references
SYNTHETICS						
KNISCHKA						
	KN-2	ruby	red	flux melt	11.6 ± 0.4 (n=3)	this work
	KNI-13	ruby plates	red	flux melt	7.5 ± 0.3 (n=2)	"
CHATHAM						
	Chatham	sapphire	blue	flux melt	9.75 ± 0.2 (n=2)	"
	CHA-1	ruby	red	flux melt	10.3 ± 0.3 (n=2)	"
	CHA-2	sapphire	blue	flux melt	9.95 ± 0.2 (n=2)	"
KASHAN						
	Kashan	sapphire	pink	flux melt	10.1 ± 0.4 (n=4)	"
	K1	sapphire	pink	flux melt	8.5 ± 0.3 (n=2)	"
RAMAURA						
	Ramaura	sapphire	pink	flux melt	18.2 ± 0.4 (n=2)	"
	R1	ruby "reject"	red	flux melt	18.5 (n=2)	"
VERNEUIL	Verneuil	ruby	purple-red	flame fusion	24.4 ± 0.2 (n=3)	"
HEATING TREATMENT						
VIETNAM (unheated)	VN-PAIR-27	ruby	pinkish		17.7	"
VIETNAM (heated Flux)	VN-PAIR-28	ruby	pink	flux	18.0	"
VIETNAM (unheated)	VN-PAIR-25	ruby	pinkish		19.9	"
VIETNAM (heated Flux)	VN-PAIR-26	ruby	pink	flux	19.4	"
MADAGASCAR (unheated)	MAD4A	sapphire	pinkish to colourless		1.9	"
MADAGASCAR (heated)	MAD4B	sapphire	orange	flux	1.5	"
ASUSA (unheated)	U9011A	ruby	pinkish		12.6	"
ASUSA (heated)	U9011B	ruby	deep purple	flux	12.7	"
TANZANIA (unheated)	SONG1A	sapphire	purplish		5.3	"
TANZANIA (heated)	SONG1B	sapphire	orange	flux	5.2	"
SUMJAM (nouvelle mine)	SUM-3	sapphire	light blue		11.2	"
SUMJAM (nouvelle mine) (heated 1700°C)	SUMHEAT (nouvelle mine)	sapphire	blue	reducing conditions (1700°C)	11.0	"

Table DR1

ASIA

Country	District *or* mine	Sample	Nature	Colour	Type of deposit host rock *primary deposit (in bold)*	references	$\delta^{18}O$ (‰, V-SMOW)	references
Vietnam	**YEN BAI**							
	Tan Huong	V8	ruby	deep pink	placer in gneiss	Pham Van et al. (2004)	22.2	this work
	Yen Bai-VIGEGO	V9	ruby	deep pink	placer in gneiss	Giuliani et al. (2003)	20.7	"
	Truc Lau	V7	ruby	red	placer in gneiss	Garnier (2003)	21.7	"
	Yen Bai	V9s	sapphire	blue	placer in gneiss	"	17.7	"
	Truc Lau	Truc Lau	sapphire	grey to blue	placer in gneiss	"	7.85	"
	Yen Bai	VIGEGO	ruby	red	placer in gneiss	"	20.3	"
	Yen Bai	VIGEGO-1	ruby	red to pink	placer in gneiss	"	19.7	"
	Yen Bai	VIGEGO-2	ruby	red to pink	placer in gneiss	"	18.1	"
	Yen Bai	VIGEGO-3	ruby	pink to colourless	placer in gneiss	"	19.75 ± 0.2 (n=2)	"
	Yen Bai	VIGEGO-4	ruby	pink	placer in gneiss	"	17.0	"
	Yen Bai	VIGEGO-5	sapphire	blue (star)	placer in gneiss	"	16.8	"
	Yen Bai	VIGEGO-6	sapphire	blue to grey	placer in gneiss	"	16.2	"
	Yen Bai	VIGEGO-7	sapphire	grey	placer in gneiss	"	16.1	"
	Truc Lau	TL1	sapphire	grey to blue	**pegmatite in gneiss**	"	9.4	"
	Khe Thuan	km15	ruby	pink	**desilicated pegmatite in amphibolite**	"	7.5	"
	BABE	Babê	sapphire	grey	**pegmatite**	Pham Van et al. (2004)	6.1	"
	LUC YEN							
	Bai Da Lan	BDL	ruby	red	**marble**	Pham Van et al. (2004)	22.4	"
	An Phu	An Phu 2	ruby	pink	**marble**	Giuliani et al. (2003)	20.4	"
		An Phu 3	ruby	pink to blue	**marble**	Garnier (2003)	20.7 ± 0.1 (n=3)	"
	Luc Yen	VIGEGO	ruby	deep pink	placer in marble	"	20.3	"
	Nuoc Ngap	V46A	ruby	pink	placer in marble	"	21.7	"
	Khoan Thong	V39	ruby	pink	placer in marble	"	19.3	"
	Khoan Thong	KT2	ruby	red	placer in marble	"	21.2	"
	Luc Yen	Luc Yen 30399	ruby	red	placer in marble	"	21.4	"
	Khoan Thong	G1	sapphire	yellow	placer in marble	"	15.5 ± 0.4 (n=2)	"
	Luc Yen	LY1	sapphire	blue	placer in marble	"	19.3	"
	Luc Yen	LY2	sapphire	colourless	placer in marble	"	15.7	"
	QUY CHAU							
	Quy Chau	QC 399	ruby	red	placer in skarn and marble	Pham Van et al. (2004)	22.3	"
		QCL-3	ruby	red	placer in skarn and marble	Giuliani et al. (2003)	22.2	"
		QC 399/3	ruby	red	placer in skarn and marble	"	22.3	"
	Quy Hop	QH	sapphire	bicoloured (blue, yellow to colourless)	placer in skarn and marble	"	17.1	"
	DAK NONG							

	Dak Nong	V76a	sapphire	deep blue	placer in basalt	Pham Van et al. (2004)	6 (n=2)	"
		V76b	sapphire	blue	placer in basalt	Giuliani (field work)	6.7	"
		V76c	sapphire	green yellow	placer in basalt	"	6.9	"
		V76d	sapphire	yellow	placer in basalt	"	6.9	"
		DN-1	sapphire	deep blue	placer in basalt	"	6.4	"
	BINH THUAN							
	Binh Thuan	Binh Thuan	sapphire	blue	placer in basalt	"	7.7	"
Myanmar	**MOGOK**							
	Mogok	Mogok KY-SA	ruby	red	**marble**	Schwarz (field work)	20.1 (n=2)	"
		325	ruby	red	**marble**	Gübelin (field work)	21.1	"
		MO-2	ruby	light pink	**marble**	"	22.0	"
		333	ruby	red	**marble**	"	21.2	"
		MOGS	sapphire	blue	**desilicated pegmatite in marble**	"	15.9 ± 0.3 (n=2)	"
						"		
		MO-P1	ruby	pink translucent	placer in marble and gneiss	"	21.4	"
		MO-P2	ruby	pink translucent	placer in marble and gneiss	"	20.3	"
		MO-P3	ruby	pink	placer in marble and gneiss	"	19.0	"
		MO-P4	ruby	lilac to red	placer in marble and gneiss	"	19.2	"
		MO-P5	ruby	red	placer in marble and gneiss	"	18.9	"
		SNBUMK 48	sapphire	blue	cut stone	"	18.1	"
		SNBUMK88	sapphire	blue	"	"	14.6	"
		SNBUMK89	sapphire	blue	"	"	10.4	"
		MO-10	sapphire	blue	"	"	10.3 ± 0.15 (n=3)	"
	Thurein Taung	THT-1	sapphire	blue	**desilicated pegmatite in marble**	"	15.5	"
	MONG HSU							
	Mon Hsu	MHNID	ruby	deep pink	**marble**	Schwarz (field work)	23.0	"
		Mong Hsu GUB.	ruby	deep red	**marble**	Gübelin (field work)	23.0	"
		Mong Hsu neu K sui	ruby/sapphire	red to deep blue	**marble**	"	22.3	"
		MOHS	ruby/sapphire	red to deep blue	**marble**	"	22.5	"
Afghanistan	**JEGDALEK**							
	Jegdalek	RNAFG1	ruby	deep pink	**marble**	Bowersox et al. (2000)	21.2 ± 0.3 (n=3)	"
		RNAFG2	ruby	deep pink	**marble**	"	18.6	"
		RNAFG3	ruby	deep pink	**marble**	"	18.8	"
Azad Kashmir	**NANGIMALI**							
	Nangimali	NAN-12	ruby	deep pink	**marble**	Pêcher et al. (2002)	21.5	"
		NAN-23	ruby	deep pink	**marble**	Giuliani (field work)	18.2	"
Nepal	**RUYIL**							
		Ruyil	ruby	deep pink	**marble**	Smith et al. (1997)	20.0	"
	CHUMAR							
		Chumar	ruby	light pink	**marble**	Smith et al. (1997)	16.3 ± 0.7 (n=2)	"
		CHU-1	ruby	light pink	**marble**	Giuliani (field work)	17.4	"
		CHU-2	ruby	lilac to blue	**marble**		17.0	"
Pakistan	**HUNZA**							
	Furandar	HU-19a	ruby	pink	**marble**	Garnier et al. (2004)	22.7	"
	Ahmadabad	R4	ruby	pink	**marble**	Giuliani (field work)	21.1	"

	Daghan Das	R5	ruby	pink	**marble**	"	22.0	"
	Foruhar	R1	ruby	pink	**marble**	"	20.4	"
	Hassanarabad	HU-20c	ruby	pink	**marble**	"	20.1	"
	Laling Tolian	HU-12b	ruby	pink	**marble**	"	16.85 ± 0.35 (n=3	"
	Ting Ten Har	HU-5a	ruby	pink	**marble**	"	20.2	"
	Dony Das	HU-1e	ruby	pink	**marble**	"	21.6	"
	Grechar	GRE-1	ruby	deep pink	**marble**	"	21.3	"
	BATAKUNDI							
		Batakundi	ruby	red	**marble**	Giuliani (field work)	22.0	"
Tadjikistan	**TURAKULOMA**							
		T1	ruby	light pink	**marble**	Smith (1998)	19.6	"
		T2	ruby	red	**marble**	Terekhov et al. (1999)	19.9	"
		T3	ruby	red	**marble**	"	20.0	"
India	**KASHMIR**							
	Sumjam 2002 deposit	SUM-1	sapphire	grey	**amphibolite**	Atkinson &	4.9 ± 0.05 (n=3)	"
	Sumjam 2002 deposit	SUM-2	sapphire	bluish to grey	**amphibolite**	Kothavala (1983)	4.2	"
	Sumjam (old placer)	SUM-3	gemmy sapphire	colourless to bluish	**at the border of a desilicated pegmatite "Nouvelle mine" in plagioclasite (kaolin)**	Voillot (field work) "	11.2	"
	Sumjam 2002 deposit	SUM-4	gemmy sapphire	bluish	**desilicated pegmatite (kaolin)**	"	10.9	"
	MYSORE							
		MYMM96	ruby	red	**gneiss**	Hughes (1997)	3.8	"
		RNDUD002	ruby	red	**gneiss**	"	3.5	"
Cambodia	**PAILIN**							
		Pailin-1	ruby	red	placer in basalt	Hughes (1997)	4.7	"
	PAILIN (Bo-Rai)							
		BR1	sapphire	blue-yellowish	placer in basalt	Hughes (1997)	6.8	"
		BR2	sapphire	purple	placer in basalt	Schwarz (field work)	4.6	"
		BR3	ruby	light red	placer in basalt	"	5.3	"
Thailand	**BO PHLOI-KANCHANABURI**							
		SAP-1	sapphire	colourless-yellowish	placer in basalt	Schwarz (field work)	6.4	"
		SAP-2	ruby	light pink	placer in basalt	"	6.4	"
	PHRAE							
		PH1	trapiche-like	blue	placer in basalt	Gübelin (field work)	6.1	"
	DENCHAI							
		BK-1-a	sapphire	dark blue	placer in basalts	Yui et al. (2003)	4.7	Yui et al. (2003)
		BK-1-b	sapphire	dark blue	"	"	4.7	"
		BK-1-c	sapphire	dark blue	"	"	5.1	"
		BK-1-d	sapphire	dark blue	"	"	5.1	"
		BK-1-e	sapphire	dark blue	"	"	5.1	"
		MS-1-a	sapphire	dark blue	"	"	5.5	"
		MS-1-b	sapphire	dark blue	"	"	4.8	"

Table DR1

		BK-2-a	sapphire	blue	"	"	4.9	"
		BK-2-b	sapphire	blue	"	"	8.4	"
		BK-2-c	sapphire	blue	"	"	6.1	"
		MS-2-a	sapphire	blue	"	"	4.7	"
		MS-2-b	sapphire	blue	"	"	6.1	"
		BK-3-a	sapphire	blue-green-yellow	"	"	5.9	"
		MS-3-a	sapphire	blue-green-yellow	"	"	5.1	"
		MS-3-b	sapphire	blue-green-yellow	"	"	5.3	"
		MS-3-c	sapphire	blue-green-yellow	"	"	5.7	"
Sri Lanka	**RATNAPURA**							
		SL11	sapphire	colourless	placer	Schwarz (field work)	13.6	this work
		SL21	sapphire	translucent	placer	"	14.5	"
		SL31	sapphire	green	placer	"	10.3 ± 0.06 (n=3)	"
		SL41	sapphire	light blue	placer	"	15.4	"
		SL51	sapphire	blue	placer	"	13.9	"
		SL61	sapphire	deep blue	placer	"	13.8	"
		SL71	sapphire	lilac blue	placer	"	14.1	"
		SL81	ruby	pink	placer	"	14.1	"
		SL91	sapphire	yellow to brown	placer	"	14.4	"
		SL	sapphire	colourless	placer	"	14.8 ± 0.15 (n=3)	"
	RUPAHA NILDADDAAHINNA	RUC-2	sapphire	grey	**skarn at the contact with serpentinite**	Prashan Francis (field work)	7.7	" "
	ELAHERA MEDAULPOTA	ELC-11	sapphire	grey	**skarn at the contact with marble**	"	10.4	"
	KALTOTA MEDABEDDA	Kcl-5	sapphire	grey	**skarn at the contact with marble**	"	8.2	"
	ELAHERA PATHMARAGA	PAD	padparadscha	orange light	placer	"	17.1	"
	NELUYAYA KALTOTA	Kcl-3	ruby	pinkish	**granulitic gneiss**	"	7.1	"
	BALANGODA HERAMITIGALA	BAC-5	sapphire	grey to blue	**skarn at the contact with marble**	"	10.7	"

References

Pham van et al. (2004) Gem corundum deposits in Vietnam. Journal of Gemmology, 29, 3, 129-147.
Giuliani et al. (2003) CO2-H2S-COS-S8-AlO(OH)-bearing fluid inclusions in ruby from marble-hosted ruby deposits in Luc Yen area, North Vietnam. Chemical Geology, 194, 167-185
Garnier (2003) Les gisements de rubis associés aux marbres de l'Asie Centrale et du Sud-est : genèse et caractérisation isotopique. PhD Thesis INPL Nancy, France, 371 p.
Bowersox et al. (2000) Ruby and sapphire from Jegdalek, Afghanistan. Gems & Gemology, 36, 110-126.
Pêcher et al. (2002) Geology and geochemistry of the Nangimali ruby deposit area, Nanga Parbat Himalaya in Nangimali ruby deposit area (Azra-Kashmir). Journal of Asian Earth Sciences, 21, 265-28
Smith et al. (1997) Rubies and fancy-color sapphires from Nepal. Gems & Gemology, 33, 24-41.
Garnier et al. (2004) Les gisements de rubis du Viêtnam et du Pakistan. Revue de gemmologie AFG, 150, 1-7.
Smith (1998) Rubies and pink sapphires from the Pamir Mountain Range in Tadjikistan, former USSR. Journal of Gemmology, 26, 103-109.

Table DR1

Terekhov et al. (1999) Rare earth elements in corundum-bearing metasomatic and related rocks of the Eastern Pamirs. Geochemistry International, 37, 202-212.
Atkinson & Kothavala (1983) Kashmir sapphire. Gems & Gemology, 19, 64-76.
Hughes (1997) Ruby and sapphire. RWH publishing, Boulder, 511 p.
Yui et al. (2003) Oxygen isotope composition of the Denchai sapphire, Thailand : a clue to its enigmatic origin. Lithos, 67, 153-161.

OCEANIA

Country	District *or* mine	Sample	Nature	Colour	Type of deposit host rock *primary deposit (in bold)*	references	$\delta^{18}O$ (‰, V-SMOW)	references
Australia	**INVERELL**	Inverell-1	sapphire	yellow	placer in basalt	Schwarz (field work)	6.5	this work
		Inverell-2	sapphire	grey blue	placer in basalt	"	6.5	"
	BARRINGTON							
		BAR-1	ruby	red	placer in basalt	Sutherland et al. (1998)	5.9	this work
		BAR-2	ruby	dark pink	placer in basalt	"	5.1	"
		BAR-3	ruby	light pink	placer in basalt	"	5.4	"
		BAR-5	ruby	very light pink	placer in basalt	"	5.4	"
		BAR-6	sapphire	colourless to pink	placer in basalt	"	5.5	"
		BAR-7	sapphire	orange	placer in basalt	"	6.2	"
		BAR-8	sapphire	yellow	placer in basalt	"	5.8	"
		BAR-9	sapphire	green	placer in basalt	"	5.4	"
		BAR-10	sapphire	purple	placer in basalt	"	5.8	"
		BAR-11	sapphire	pale blue	placer in basalt	"	5.2	"
		BAR-12	sapphire	blue	placer in basalt	"	5.2	"
		BAR-13	sapphire	deep blue	placer in basalt	"	4.6	"
Madagascar								
	ANDRANONDAMBO	SNMAD-1	sapphire	colourless to blue	**skarn in marbles**	Rakotondrazafy al. (1996)	14.0	"
		SNMAD-2	sapphire	deep blue	**and calc-silicates**	Schwarz et al. (1996)	10.7 ± 0.1 (n=2)	"
	ILAKAKA	ILA-1	sapphire	colourless	placer in sandstone	Garnier et al. (2004)	14.3 ± 0.14 (n=2)	"
		ILA-2	sapphire	colourless to pink	placer in sandstone	Giuliani (field work)	3.5	"
		ILA-3	sapphire	amethyst	placer in sandstone	Garnier (field work)	3.6	"
		ILA-4	ruby	deep pink	placer in sandstone	Schmetzer (1999)	2.6 ± 0.3 (n=2)	"
		ILA-5	sapphire	colourless	placer in sandstone	"	16.5	"
		ILA-6	sapphire	colourless	placer in sandstone	"	3.1	"
	EJEDA	EJE	ruby	red	**primary in amphibolite and serpentinite**	Mercier et al. (1999) Giuliani (field work)	5.9	"
	GOGOGOGO	GO-1	ruby	pink	**primary in amphibolite**	"	3.8	"
	AMBONDROMIFEHY	ANT-1	sapphire	yellowish-light green	placer in basalt	Schwarz et al. (2000)	5.1	"
		ANT-2	sapphire	light blue	placer in basalt	Giuliani (field work)	5.9	"
	ANTSIRABE							
	Antanifotsy	SNANTAN1	sapphire	bluish	placer in basalt	Rakotosamizanany (2003)	6.5	"
		SNANTAN2	sapphire	greenish to blue	placer in basalt	Giuliani (field work)	6.9	"
	Somiakatra	RNANTA	ruby	reddish-purplish	**xenocryst in enclaves**	"	4.7	"

					of pyroxenite within basalt			
	VATOMANDRY	VAT-1	ruby	red	placer in ? (unknown)	Schwarz et al. (2001)	5.9	"
New Zealand	**HOKITIKA**	HOK	ruby	reddish	**primary in serpentinite**	Grapes and Palmer (1996	3.2	"

References

Sutherland et al. (1998) Distinctive gem corundum suites from discrete basalt fields: a comparative study of Barrington, Australia, and West Pailin, Cambodia, gemfields. The Journal of Gemmology, 26, 2, 65-85.

Rakotondrazafy et al. (1996) Mode of formation of hibonite (CaAl12O19) within the U-Th skarns from the granulites of S-E Madagascar. Contrib. Mineral. Petrol., 123, 190-201

Schwarz et al. (1996) Sapphires from the Andranondambo region, Madagascar. Gems & Gemology, 32, 80-99.

Garnier et al. (2004) Saphirs et rubis. Classification des gisements de corindon. Le Règne Minéral, 55, 7-47.

Schmetzer (1999) Ruby and variously coloured sapphires from Ilakaka, Madagascar. Australian gemmologist, 20, 7, 282-284.

Mercier et al. (1999) Ruby mineralization in Southwest Madagascar. Gondwana Research, 2, 3, 433-438.

Schwarz et al. (2000) Sapphires from Antsiranana province, Madagascar. Gems & Gemology, 36, 3, 216-233.

Rakotosamizanany (2003) Les gisements de rubis de Soamiakatra: caractères minéralogiques-gemmologiques-conditions de formation. Master thesis University of Antananarivo, Madagascar, 74 p.

Schwarz et al. (2001) Rubies from the Vatomandry area, eastern Madagascar. The Journal of Gemmology, 27, 7, 409-416.

Grapes & Palmer (1996) (Ruby-sapphire)-chromian mica-tourmaline rocks from Westland, New Zealand. Journal of Petrology, 37, 293-315.

AFRICA

Country	District *or* mine	Sample	Nature	Colour	Type of deposit host rock *primary deposit (in bold)*	Type of deposit references	$\delta^{18}O$ (‰, V-SMOW)	$\delta^{18}O$ references
Tanzania								
	MAHENGE	TA-1	sapphire	colourless to pink	placer ***BUT*** originating	Simonet (2000)	15.6	this work
		TA-2	ruby	pink	from primary skarn and	Schwarz (field work)	13.6	"
		TA-3	ruby	red	breccia deposit in ruby-	"	17.8	"
		TA-4	ruby	lilac	bearing marble	"	15.9	"
	LUKANDE	LU-1	ruby	red	placer	Schwarz (field work)	12.5	"
	KITONGA (**Morogoro)**	KIT-1	ruby	pinkish to red	placer	Schwarz (field work)	12.3	"
	MATOMBI (Morogoro)	MAT-1	ruby	red	placer	Schwarz (field work)	13.1	"
	MOROGORO	MOKANIS	ruby	red	**marble**	Hänni & Schmetzer (1991) Simonet (2000) Schwarz (field work)	16.3	"
	KIBANGILE	KIKANIS	ruby	red	placer	John Saul (field work)	15.8	"
	S-USAMBARA (Tanga Province)	S-U1	ruby	red	placer	John Saul (field work)	7.2	"
	KITWAI (Trusha)	KI-1	ruby	red	placer	John Saul (field work)	4.0 ± 0.75 (n=3)	"
	KITETO	KITETO	ruby	pink	placer	John Saul (field work)	9.4	"
	UMBA	SNTANG-06	sapphire	blue	**desilicated pegmatite in serpentinite**	Solesbury (1967) Seifert & Hyrsl (1999)	6.7	"
		UMB-1	ruby	red	placer	Schwarz (field work)	6.2	"
		UMB-2	ruby	red	placer	"	17.4	"
		UMB-3	sapphire	colourless	placer	"	5.4	"
	LONGIDO	L1	ruby	red	**amphibolite/**	Dirlam et al. (1992)	7.0	"
		L2	ruby	red	**carbonatised gneiss**	Simonet (2000)	6.6	"
		L4	ruby	red	"	Bassett (field work)	6.4	"
		L5 (S.K.)	ruby	red	"	"	6.8	"
	TUNDURU	Tunduru 4	ruby	pinkish	placer	Schwarz (field work)	4.4	"
		TUNISO-01	ruby	red pinkish	placer	"	14.9	"

		TUNISO-05	sapphire	bluish	placer	"	11.7	"
	SONGEA	SONSIO-09	sapphire	colourless	placer	Schwarz (field work)	4.8	"
		SONSIO-08	sapphire	yellowish-greenish	placer	"	5.9	"
		SONSIO-01	ruby	purple to deep pink	placer	"	4.3	"
		SONSIO-02	ruby	reddish	placer	"	4.9	"
EASTERN AFRICA								
	KORNERUPINE CLAIM	TS	ruby	red	placer	John Saul (field work)	5.6	"
Zaire	**LUMUMBASHI** (Shaba province)	LUB-1	ruby	pink	placer	John Saul (field work)	13.0	"
Kenya	**JOHN SAUL MINE**							
	John saul mine	JS1	ruby	lilac to red	**pegmatite/ gneiss/**	Mercier et al. (1999)	12.7	"
		JS2	ruby	lilac to red	**serpentinite/**	"	13.2	"
		JS3	ruby	lilac to red	**desilicated gneiss**	"	12.4	"
		JS5	ruby	lilac to red	**and pegmatite**	"	11.9	"
	Nganga sector	JS4	ruby	pink	**"**	"	12	"
		Nganga	ruby	red	**"**	"	12.1	"
	Gitonga	GIT-1	ruby	light red	**"**	"	13.1	"
	Machanga	Mach-1	ruby	red	**pegmatite/ gneiss/ serpentinite/ desilicated gneiss and pegmatite**	John Saul (field work)	13.1	"
	GARBA TULA	GT-1	sapphire	yellow green	**syenite**	Simonet et al. (2004) John Saul (field work)	5.2	"
	GL mine	GL1	ruby	red	**pegmatite/ gneiss/ serpentinite/ desilicated gneiss and pegmatite**	Schwarz (field work)	12.9	"
	West Pokot	WP	sapphire	pink	placer	John Saul (field work)	18.5 ± 0.45 (n=3)	"
	KITUI	K1	sapphire	pink	**amphibolite**	Simonet (2000) Schwarz (field work)	4.0 ± 0.35 (n=3)	"
South Africa	**unknown**	D1	corundum		**pegmatite**	Kerrich et al. (1987)	8.2	Kerrich et al. (1987)
		D2	corundum		**pegmatite**	"	8.1	"
		D3	corundum		**pegmatite**	"	8.2	"
		77A	corundum		**anorthite-**	"	5.8	"
		Z7B	corundum		**edenite rock**	"	5.8	"
	ORANGE RIVER	ORA	ruby	red	placer	John Saul (field work)	5.7	
	TSHIPISE MESSINA (N. Transvaal)	TSM-1	ruby	red	?	John Saul (field work)	11.0	
Zimbabwe	**O'Briens Claims**	C3	corundum		**mafic ultramafic**	Kerrich et al. (1987)	4.4	Kerrich et al. (1987)
		C4	corundum		**schist (verdite)**	"	3.9	"
		C6	corundum		**"**	"	3.7	"
		C7	corundum		**"**	"	3.5	"
		C8	corundum		**"**	"	4.8	"

Table DR1

		RHO-1	ruby	pink	**muscovite-margarite lenses in mafic-ultramafic rocks**	John Saul (field work)	4.4	this work
Nigeria	**Kaduna**	NI-1	sapphire	blue-green	placer in basalt	Kiefert & schmetzer (1987 Schwarz (field work)	5.5	this work

References

Simonet (2000) Géologie des gisements de saphir et de rubis. L'exemple de la John Saul rubis mine, Mangare, Kenya. PhD thesis, University of Nantes, France, 349 p.

Hänni & Schmetzer (1991) New rubies from the Morogoro area, Tanzania. Gems & Gemology, 27, 3, 156-167.

Solesbury (1967) Gem corundum pegmatites in NE Tanganyika. Economic Geology, 62, 983-991.

Seifert & Hyrsl (1999) Sapphire and garnet from Kalalani, Tanga province, Tanzania. Gems & Gemology, 35, 2, 108-120.

Dirlam et al. (1992) Gem wealth of Tanzania. Gems & Gemology, 28, 2, 80-102.

Mercier et al. (1999) Exotic origin of the ruby deposits of the Mangari area in SE Kenya. Ore Geology Reviews, 14, 83-104.

Simonet et al. (2004) The Dusi (Garba Tula) sapphire deposit, Central Kenya-a unique Pan-African corundum-bearing monzonite. Journal of African Earth Sciences, 38, 401-410.

Kerrich et al. (1987) Corundum, Cr-muscovite rocks at O'Briens, Zimbabwe: the conjunction of hydrothermal desilicification and LIL-element - geochemical and isotopic evidence. Contributions to Mineralogy and Petrology, 95, 481-498.

Kiefert & Schmetzer (1987) Blue and Yellow sapphire from Kaduna province, Nigeria. Journal of Gemmology, 20, 427-442.

AMERICA

Country	District *or* mine	Sample	Nature	Colour	Type of deposit host rock *primary deposit (in bold)*	Type of deposit references	$\delta^{18}O$ (‰, V-SMOW)	$\delta^{18}O$ references
Canada	**GRENVILLE**	S1	corundum	?	**syenite**	Kerrich et al. (1987)	7.6	Kerrich et al. (1987)
		S2	corundum	?	**"**	"	7.8	"
		S3	corundum	?	**"**	"	7.6	"
United-states	**YOGO GULCH**	1a	sapphire	darker purple	**ultramafic**	Mychaluk (1995)	5.8	Fallick (unpublished)
	(Montana)	1b	"	lighter purple	**lamprophyre/**	"	5.7	"
		2a	"	purple blue	**lamproite**	"	5.6	"
		2b	"	blue-purple		"	5.4	"
		4a	"	light violet blue		"	6.05	"
		4c	"	light violet blue		"	5.6	"
		5a	"	very light violet blue		"	6.2	"
		5b	"	very light violet blue		"	6.0	"
		5c	"	very light violet blue		"	6.0	"
		7a	"	cornflower blue		"	6.0	"
		7b	"	cornflower blue		"	5.8	"
		8a	"	cornflower blue		"	5.7	"
		8b	"	cornflower blue		"	6.6	"
		11a	"	bright blue		"	6.6	"
		11b	"	blue		"	6.8	"
		15a	"	light purple		"	6.5	"
	ROCK CREEK	Montana	sapphire	colourless	placer	Clabaugh (1952) Mychaluk (1995)	3.3 ± 0.25 (n=4)	this work
Colombia	**MERCADERES**	MER-1	sapphire	colourless	**basaltic but with**	Keller et al. (1985)	7.2	this work
		MER-2	sapphire	blue	**enclaves of**	Scharff (1993)	7.5	"
		MER-3	sapphire	green	**garnet-amphibolites**	"	7.3	"
		MER-4	sapphire	lilac	**(mafic granulites)**	"	7.0	"
		MER-5	ruby	pink	and placers	"	7.0	"
		MER-6	sapphire	yellow		"	7.1	"
Brazil	**BARRA VELHA**	BV1	ruby	pink	placer in a granulitic	Chodur et al. (2000)	6.6	"
	(Santa Catarina)	BV2	ruby	deep pink to red	complex system	Schwarz (field work)	6.2	"
		BV3	ruby	deep red		"	6.9	"
	GARIBALDI	GA-1	ruby	pink	placer	Schwarz (field work)	4.0	"
	(Santa Catarina)	GA-2	ruby	pink	placer	"	4.5	"
	INDAIA	IN-1	sapphire	grey to blue	placer (colluvial)	Liccardo & Jordt	9.3	"

(Minas Gerais)	IN-2	sapphire	grey to blue	(biotite gneiss) (biotite gneiss)	Evangelista (2000) Schwarz (field work) Epstein et al. (1994)	9.8	"
MALACACHETA	MAL-1	sapphire	yellow to green	placer	Liccardo et al. (2000)	8.8 ± 1.0 (n=3)	"
(Minas Gerais)	MAL-2	sapphire	colourless	placer	Schwarz (field work)	10.9	"
	MAL-3	sapphire	blue	placer	"	10.8	"
	MAL-4	sapphire	colourless to pink	placer	"	10.4	"
	MAL-5	sapphire	dep blue	placer	"	10.0 ± 0.15 (n=6)	"
MATO GROSSO	MG-1	sapphire	green to blue	placer	Liccardo et al. (2000) Schwarz (field work)	6.1	"
	PXE	corundum	light grey	placer within the syenitic alkaline complex of Rio de Peixe	"	7.75 ± 0.07 (n=2)	"
	SAP	sapphire	light purple	placer	Schwarz (field work)	8.3	"
	SAPPR	sapphire	black	placer	Schwarz (field work)	7.3	"
	PALM	sapphire	pink	placer	Schwarz (field work)	7.1	"
	VAVA	ruby	red	placer	Schwarz (field work)	6.9	"
	BULHA	sapphire	grey to light pink	placer	Schwarz (field work)	7.3	"
RIO COXIM	SNBRRC1	sapphire	green	placer	Liccardo et al. (2000)	6.9	"
	SNBRRC2	sapphire	light blue	placer	Schwarz (field work)	6.6	"
	SNBRRC3	sapphire	deep blue	placer	"	6.6	"
	SNBRRC4	sapphire	black	placer	"	6.7	"

References

Kerrich et al. (1987) Corundum, Cr-muscovite rocks at O'Briens, Zimbabwe: the conjunction of hydrothermal desilicification and LIL-element - geochemical and isotopic evidence. Contributio to Mineralogy and Petrology, 95, 481-498.

Mychaluk (1995) The Yogo sapphire deposit. Gems & Gemology, 31, 28-45.

Clabaugh (1952) Corundum deposits of Montana. U.S. Geological Survey Bulletin, 983, 100 p.

Keller et al. (1985) Sapphire from the Mercaderes-Rio Mayo area, Colombia. Gems & Gemology, 21, 20-25.

Scharff (1993) Origen de los corindones y granates asociados en el area Mercaderes-Rio Mayo, Departamento del Cauca, Colombia. Master Thesis Universidad EAFIT Medellin, 97 p.

Chodur et al. (2000) Caracterizaçao e origem do corindon (rubi e safira) de Barra Velha, Santa Catarina. I simposio Brasileiro de tratamento e caracterizacao de Gemas, 5-9 november 2000 Ouro Preto , Brasil, http: www.ufop.br/pesquisa/gemas/regemas1.htm

Liccardo & Jordt-Evangelista (2000) Aspectos geoquimicos en safiras da regiao de Indaia, Minas Gerais. I simposio Brasileiro de tratamento e caracterizacao de Gemas, 5-9 november 2000 Ouro Preto , Brasil, http: www.ufop.br/pesquisa/gemas/regemas5.htm

Epstein et al. (1994) The Indaia sapphire deposits of Minas Gerais. Gems & Gemology, 30, 24-32.

Liccardo et al. (2000) Caracterizaçao gemologica das safiras de Malacacheta, MG. I simposio Brasileiro de tratamento e caracterizacao de Gemas, 5-9 november 2000, Ouro Preto , Brasil, http: www.ufop.br/pesquisa/gemas/regemas3.htm

Liccardo et al. (2000) Identificaçao de fases hidratadas em corindon no Brasil. I simposio Brasileiro de tratamento e caracterizacao de Gemas, 5-9 november 2000, Ouro Preto , Brasil, http: www.ufop.br/pesquisa/gemas/regemas2.htm

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VENDEE							
Brétignolles	V1	sapphire	bue	placer in an amphibolite	Goujou (2002)	7.5	this work
	V2	sapphire	colourless	complex	"	6.7	"
	V3	sapphire	bluish	placer in an amphibolite complex	Goujou (2002)	6.5	"

References

Upton et al. (1999) Megacrysts and associated xenoliths : evidence for migration of geochemically enriched melts in the upper mantle beneath Scotland. Journal of Petrology, 40, 935-956

Kissin (1994) Ruby and sapphire from the southern Ural Mountains, Russia. Gems & Gemology, 30, 243-252.

Spiridonov (1998) Gemstone depopsits of the formerSoviet Union. Journal of Gemmology, 26, 2, 111-124.

Hunstiger (1990) Darstellung und vergleich primaerer rubinvorkommen in metamorphen muttergesteinen - petrographie and phasenpetrologie. Teil III. Zeitschrift der Deutsche Gemmologische Gesellschaft, 39, 121-145.

Forestier (1993) Histoire de l'un des gisements de gemmes le plus anciennement connu d'Europe occidentale: saphirs, grenats et hyacinthes du Puy en Velay (43). Cahiers de la Haute Loire, 81-148.

Gaillou (2000) Les saphirs du Massif Central: étude minéralogique des saphirs du Sioulot, du Mont Coupet et du Menoyre. DEA Université de Clermont-Ferrand, 45 p.

Lacroix (1962) Minéralogie de la France et de ses territoires d'Outre-Mer, Tome troisième, nouveau tirage. Librairie Scientifique et Technique Albert Blanchard, 237-247 et 211-214.

Goujou (2002) Les saphirs des plages vendéennes: un gisement à localisation variable. Le Règne Minéral, 46, 19-27.

Rovetti & Pacciorini (1994) Campolungo, Schweiz: neufund grösten korund-kristalle der Alpen. Lapis, p. 35.

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