

1[22:21] <@Spauwe> no let's start talking stone a bit

01[22:21] <@Spauwe> dragon, you familiar with spinels?

[22:21] <DragonStek> been reading

01[22:21] <@Spauwe> have a few (synthetic ones)?

[22:21] <DragonStek> no i dont

01[22:22] <@Spauwe> ebay will get you a few FF ones for a few dimes ey

01[22:22] <@Spauwe> there is stacks of 'm floating this earth

[22:22] <DragonStek> doos they alter the AL solution to make them more stable right

1[22:22] <@Spauwe> yep

[22:22] <DragonStek> ok

1[22:23] <@Spauwe> want to go there first?

[22:23] <DragonStek> you can

1[22:23] <@Spauwe> most synthetic spinel is produced by the Flame Fusion method

1[22:23] <@Spauwe> but it has proven to be very difficult to produce spinel in it's natural chemical structure

1[22:24] <@Spauwe> too much strain will build up in the boule and it will be prone to shattering

1[22:25] <@Spauwe> in order to fix that they started experimenting with the amounts of ingredients

01[22:25] <@Spauwe> proportions is the word I was looking for

01[22:26] <@Spauwe> spinels are composed of $MgAl_2O_3$

01[22:26] <@Spauwe> ai

[22:26] <DragonStek> yup

01[22:26] <@Spauwe> $MgAl_2O_4$

01[22:26] <@Spauwe> that last four is essential

01[22:26] <@Spauwe> corundum is AlO_3

[22:26] <doos> +2

01[22:27] <@Spauwe> so to speak we can break it up in MGO and Al_2O_3

01[22:27] <@Spauwe> yesh you right

01[22:27] <@Spauwe> magnesion oxide and aluminum oxide

01[22:28] <@Spauwe> all in all one Mg ion, two Al ions and 4 O ions

22:28] <DragonStek> ?

01[22:28] <@Spauwe> to produce one spinel molecule so to speak

[22:29] <doos> do you understand ions DragonStek?

[22:29] <DragonStek> i have the formulas as both $MgAl_2O_4$ and $MgAl_2O_3$

01[22:29] <@Spauwe> Mg -- Al, Al ---- 0,0,0,0

01[22:29] <@Spauwe> the O4 one is correct

01[22:29] <@Spauwe> the other one probably made the same mistake as I just did

22:29] <DragonStek> ok the must have made a mistake in notes

01[22:29] <@Spauwe> being used to the corundum formula

22:30] <DragonStek> ok

01[22:31] <@Spauwe> now, micing the ingredients in these proportions results in brittle, if not lready shattered during colling, boules

01[22:31] <@Spauwe> mixing

01[22:31] <@Spauwe> cooling

01[22:31] <@Spauwe> :)

01[22:32] <@Spauwe> after a bit of experimenting they found out that if they increased the Al_2O_3 in he mix a more stable crystal was produced

01[22:32] <@Spauwe> so instead of MgO vs Al_2O_3 being 1 : 1

01[22:33] <@Spauwe> most synthetic spinel is 1 : 1.5 to 1 : 3.5

22:33] <doos> question

01[22:33] <@Spauwe> so question: with what you learned from Doos and Annie:

01[22:34] <@Spauwe> can we truly call this stuff synthetic spinel?

01[22:34] <@Spauwe> doos?

22:34] <DragonStek> no but they do

22:34] <doos> heh, that was my question

01[22:34] <@Spauwe> ok

22:34] <DragonStek> beta corundum

06[22:35] * doos hugs DragonStek

22:35] <DragonStek> lol

01[22:35] <@Spauwe> so 'synth spinel' is actually some lower grade corundum

01[22:35] <@Spauwe> yes!!

22:35] <DragonStek> i did learn

01[22:35] <@Spauwe> you sure did

01[22:35] <@Spauwe> how are you gonna pick it from a mile away?

01[22:36] <@Spauwe> I present you a blue stone

22:36] <doos> long tweezers?

01[22:36] <@Spauwe> ok just got a text from the mrs

22:36] <DragonStek> uv light

01[22:36] <@Spauwe> she won 500 bucks

01[22:36] <@Spauwe> woeoeoeoeoeoeoe

01[22:36] <@Spauwe> hahaha

22:37] <doos> and loosing as you type

01[22:37] <@Spauwe> nah, on her way home

[22:37] <DragonStek> lwuv

01[22:37] <@Spauwe> she's the brainy one of us two

[22:37] <doos> let her pick up a desent bottle

01[22:37] <@Spauwe> nah, it's starting to grow on me

01[22:37] <@Spauwe> halfway the first glass

01[22:38] <@Spauwe> ok back into it

01[22:38] <@Spauwe> uv you say

22:38] <DragonStek> lwuv light

01[22:38] <@Spauwe> what will synth look like under lwuv?

22:39] <DragonStek> nope inert

01[22:39] <@Spauwe> complete: what will a synth blue look like under lwuv

22:39] <doos> chalky

01[22:40] <@Spauwe> under lw doos?

01[22:40] <@Spauwe> check again

01[22:40] <@Spauwe> for sw you are right

22:40] <doos> red

22:40] <DragonStek> moderate orange to orange/red

01[22:41] <@Spauwe> but under lw cobalt coloured ones fluoresce red yep

22:41] <DragonStek> but thats for cobalt blue

01[22:41] <@Spauwe> exactly

22:41] <DragonStek> pale blue green

22:41] <DragonStek> sw inert

01[22:41] <@Spauwe> most FF blues are cobalt coloured btw so my course tells me

22:41] <DragonStek> ok

22:42] <DragonStek> good to know

01[22:42] <@Spauwe> but you'll always find the odd one that isn't

01[22:42] <@Spauwe> so UV wouldn't be my weapon of choice to ID a stone as synth spinel

01[22:42] <@Spauwe> my refractometer and polariscope would be

01[22:42] <@Spauwe> first up the polariscope

22:43] <DragonStek> a mile away

22:43] <DragonStek> thats why i said uv light

01[22:43] <@Spauwe> what will we see in nearly any FF spinel when viewed between crossed p olars

01[22:43] <@Spauwe> ?

[22:43] <doos> a dark background

[22:43] <DragonStek> it stays dark

01[22:44] <@Spauwe> completely?

[22:44] <doos> the background, yes

[22:44] <DragonStek> ok yes doos answer

01[22:44] <@Spauwe> you and your background

[22:44] <doos> oh IN the spinel

01[22:45] <@Spauwe> we just mentioned strain being a problem with a pure mix

[22:45] <doos> just trying to screw up your chat, what's your problem?

[22:45] <doos> geez

01[22:45] <@Spauwe> the increased Al₂O₃ solves that partially but there will be strain

[22:45] <doos> ;)

[22:45] <DragonStek> yup forgot tabby extinction

1[22:45] <@Spauwe> that's it!

06[22:45] * doos behaves

01[22:46] <@Spauwe> you gonna edit this chat doos?

01[22:46] <@Spauwe> I spend half an hour a week to get rid of your nonsense

01[22:46] <@Spauwe> :)

[22:46] <doos> sure, feel free to shout at me

01[22:47] <@Spauwe> ghe

[22:47] <doos> hey .. I did hat for 4 years!

[22:47] <doos> that*

01[22:47] <@Spauwe> ok, so our polariscopes will reveal ADR to the max

01[22:47] <@Spauwe> yeah but that was your own nonsense

01[22:47] <@Spauwe> ghehe

22:48] <doos> heh

01[22:48] <@Spauwe> on to our refractometers with a gut feeling it just may be...

22:48] <doos> garnet!

01[22:48] <@Spauwe> and dang! confirmed by what value?

22:49] <doos> color

06[22:49] * @Spauwe slaps doos around a bit with a large trout

[22:49] <doos> color is a value

[22:49] <doos> as is uv reaction

[22:49] <DragonStek> RI and SG

[22:50] <doos> DragonStek, tell him to stop bullying me .. I'm crying here

[22:50] <DragonStek> oh dont beat up the doos aqtleast if your gonna eat the fish

01[22:50] <@Spauwe> no I mean when we wack it on the refractometer what is the very likely RI that we will get?

[22:50] <doos> dunno what that means, but ty

[22:51] <DragonStek> 1.71

[22:51] <DragonStek> he dont eat meat

01[22:51] <@Spauwe> not for FF spinel we won't

[22:51] <doos> a bit over 1.71

01[22:51] <@Spauwe> because of the diffrent make-up a few properties will change

[22:51] <doos> 1.72'sh

01[22:51] <@Spauwe> yep

[22:51] <DragonStek> 1.740

[22:52] <DragonStek> sorry

01[22:52] <@Spauwe> 1.725 is what I encounter most

01[22:52] <@Spauwe> 1.740?

01[22:52] <@Spauwe> that's a bit high

[22:52] <doos> but can be

[22:52] <DragonStek> wait sorry

01[22:52] <@Spauwe> 1.725 to 1.730 is the most common

[22:52] <DragonStek> 1.72 hit wwrong button

01[22:52] <@Spauwe> yeah that's what they all say

01[22:53] <@Spauwe> ;)

[22:53] <doos> 1.740 is an option though

01[22:53] <@Spauwe> maybe, maybe

[22:54] <DragonStek> it says it can go as high as 1.740 my notes

[22:54] <doos> even higher

[22:54] <DragonStek> but not always

01[22:54] <@Spauwe> so, we now have a blue stone with tabby extinction, an RI of 1.72ish and red fluorescence under LWUV and a chalky one under SWUV

[22:54] <doos> garnet!

01[22:55] <@Spauwe> the synthetic spinel bit has herby been proven

[22:55] <DragonStek> so no more tests ,

[22:55] <doos> are you saying there are no garnets fitting that description?

01[22:55] <@Spauwe> how are we gonna determine the colouring agent

01[22:55] <@Spauwe> I am saying just that doosie

[22:55] <doos> ok, just checking

[22:56] <DragonStek> gahnospinel

[22:56] <DragonStek> contains alot of zinc

[22:56] <doos> higher RI values

01[22:56] <@Spauwe> yes, one of them closely related natural ones

[22:56] <DragonStek> soory didnt read the garnet part

01[22:57] <@Spauwe> no I'm still working on that blue stone

01[22:57] <@Spauwe> I know now that's synth spinel

22:57] <DragonStek> lol

22:57] <doos> but did you use a raman?

01[22:57] <@Spauwe> but what I also want to know is what is the colouring agent

01[22:58] <@Spauwe> for which we do no0t need a raman

01[22:58] <@Spauwe> but our trusted what?

22:58] <DragonStek> sapphire blue Cr3+

22:58] <doos> ccf mister

01[22:58] <@Spauwe> what's wrong with our spectroscopes?

[22:59] <DragonStek> opps Co3+

01[22:59] <@Spauwe> aah

01[22:59] <@Spauwe> you had me wondering there

22:59] <DragonStek> my chaqrt didnt read it right

01[23:00] <@Spauwe> what does the cobalt spectrum look like?

01[23:00] <@Spauwe> (in a spinel)

23:00] <doos> thick thick thin? or some pattern

01[23:00] <@Spauwe> yesh

01[23:00] <@Spauwe> that one

23:00] <DragonStek> faint cobalt

01[23:01] <@Spauwe> thick ones around the 640, 580 and a thinner one at 540

01[23:01] <@Spauwe> synthetics can display a really clear one

01[23:02] <@Spauwe> the very rare natural cobalt coloured one usually displays a really faint one

23:02] <DragonStek> ok

01[23:02] <@Spauwe> So conclusion:

23:02] <doos> dolos is sweet!

23:02] <doos> doos* argh

01[23:03] <@Spauwe> RI, ADR, LWUV and clear cobalt spectrum bring us to the conclusion that it's synthetic blue spinel

01[23:03] <@Spauwe> New stone

01[23:03] <@Spauwe> red stone

01[23:04] <@Spauwe> singly refractive

01[23:04] <@Spauwe> chromium spectrum

[23:04] <doos> garnet!

01[23:04] <@Spauwe> sigh

01[23:04] <@Spauwe> RI 1.719

01[23:04] <@Spauwe> SG 3.65

[23:05] <doos> never heard of a garnet with that low of a RI, but ok

01[23:05] <@Spauwe> inclusions: liquid feathers/healed fractures

01[23:05] <@Spauwe> a bubble is seen in a cavity so it must contain fluid

01[23:06] <@Spauwe> what are we dealing with here?

01[23:06] <@Spauwe> doos?

[23:06] <doos> I'm confused .. why do you keep bringing up garnets?

01[23:06] <@Spauwe> use that brain of yours and reply

[23:07] <DragonStek> natural stone

01[23:07] <@Spauwe> we would think so ey?

01[23:07] <@Spauwe> but actually fluid inclusions in spinel are extremely rare

01[23:07] <@Spauwe> virtually non existant

01[23:07] <@Spauwe> off course there is the exceptions to the rule

01[23:08] <@Spauwe> but in general: no fluids in spinel

01[23:08] <@Spauwe> in natural spinel

01[23:08] <@Spauwe> I should say

[23:08] <DragonStek> yes i see it says rare after it

01[23:08] <@Spauwe> cause there is a synthetic that has 'm

01[23:09] <@Spauwe> because it's produced in a liquid

01[23:09] <@Spauwe> Flux melt spinel

01[23:09] <@Spauwe> flux filled cavities, healed fractures containg liquid worms and droplets

01[23:09] <@Spauwe> etc

01[23:10] <@Spauwe> remember: if you see a fluid in a spinel become very very weary

[23:10] <DragonStek> ?

01[23:10] <@Spauwe> and: if you can't find a natural inclusion in it there's no way that you can id it as natural

01[23:11] <@Spauwe> what is the question?

[23:11] <DragonStek> does alot of spinel have natural inclusions in them ?spinel octahedra and hexagonal prisma of apatite

01[23:11] <@Spauwe> yep

[23:11] <DragonStek> ok

01[23:11] <@Spauwe> tose ones

[23:12] <doos> minute

01[23:12] <@Spauwe> minute?

[23:12] <doos> very small

01[23:12] <@Spauwe> very small what?

[23:12] <doos> very small sir

01[23:13] <@Spauwe> mrs enters

01[23:13] <@Spauwe> gimme a minute

[23:13] <DragonStek> minutok i see now natural has small inclusions minut to theeye

[23:14] <DragonStek> he should be happy she brought money home lol

[23:15] <DragonStek> did you leave us Doos

[23:16] <doos> yes

[23:16] <DragonStek> lol

[23:16] <doos> :)

[23:16] <DragonStek> so natural will look flawless but minut inclusions ? right

[23:16] <doos> yes

[23:16] <DragonStek> ok got it

01[23:17] <@Spauwe> ghehehe

[23:17] <doos> and the ADR will not be that drastic

[23:17] <doos> in flux the ADR is not that diagnostic either

01[23:17] <@Spauwe> ok...

[23:17] <DragonStek> ok but always look for it

[23:18] <doos> yes