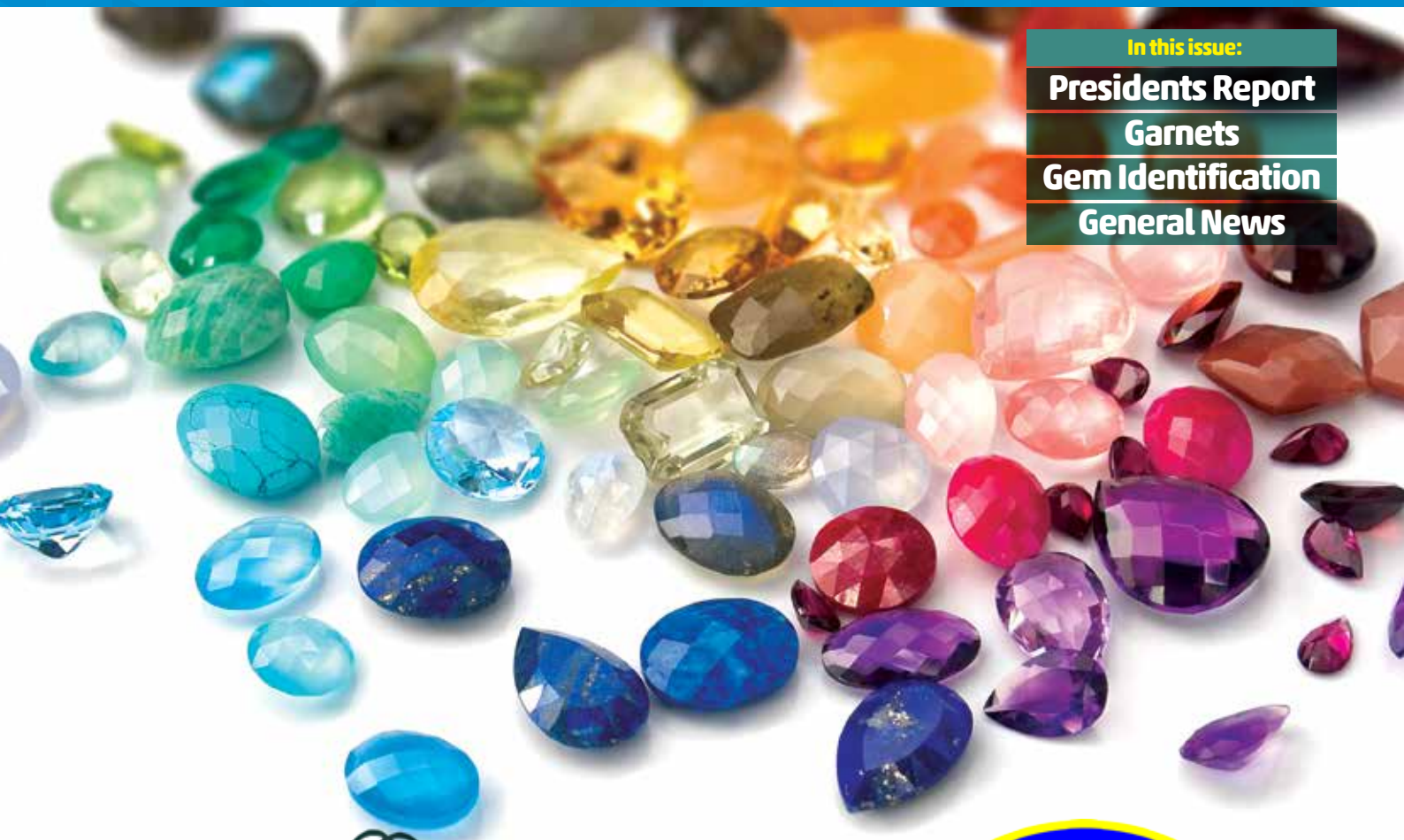
BENDIGEM

The official newsletter of
Bendigo Gem Club Inc.

November 2017



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Bendigo GEM Club EXPO

BENDIGO GEM CLUB

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BendigoGemClub

Bendigo Gem Club

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Club Contacts:

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facebook.com/BendigoGemClub
facebook.com/groups/gemarama/?fref=ts

Executive Committee

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Vice President
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Charlie Bock

Mineral Reps
Pat Sutton 5441 5656
John Carey (see above)

Club Fees 2016

Joining Fee
$30 one off

Name Tags
$10

Yearly Membership
$30/Single
$40/Family
$15/Associate

Adult Workshop Fees
Full day $6.00
Half/Part day $3.00
Evenings $3.00

Workshop Times:
Tues. evenings
5-7 p.m.
John Carey and Peter Covington

6-8:30p.m.
John Carey

Thurs.
10 a.m.- 4 p.m.
Instructors in all fields

Thurs. nights
7-10 p.m.
Kate Middleton

Committee Meetings

3rd Thursday at 7:00 p.m.
All members WELCOME

Annual General Meeting

3rd Friday in November Unless stated otherwise.

Presidents Report

Another month closer to Christmas. This month brings about the Annual General Meeting. I encourage as many members as possible to attend the meeting and perhaps even put your hand up for a position on the committee. Details on the meeting are listed later in the Bendigem.

We had quite a few new members join the club from the expo and I would like to take this opportunity to welcome them to the club. I hope you enjoy your time with us.

We are coming up to the end of the year, which can only mean one thing - Chrimstas Party. We would love to see as many members as we can squash into the Queens Arms for our end of year party. It has been a big year for the club and we all deserve a fancy night out to celebrate our acheivments.

It is very pleasing to see the club full of members making beautiful creations and utilising the clubs facilities. I hope we can continue to grow into the new year.

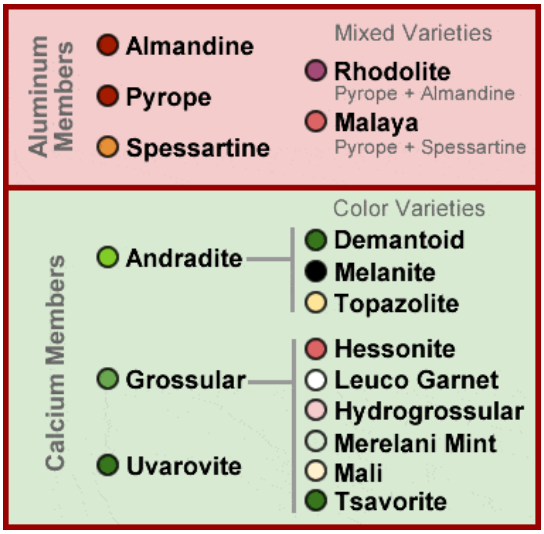
Al
President

Garnets

In the June edition of the Bendigem, I gave you a small taste of Garnets. The image below shows the variety of colours that garnet comes in.

Most people associate garnets as being red or pink, as these are the most common and less expensive varieties. But there are a number of others, and as you can see, a number of different colours available.

Garnet chemical composition is quite complex, not so much in the required chemicals that make up the garnets, but in the variety of different compositions available. Garnets are categorised into groups, based on their chemical makeup. The table below shows the different groups and the varieties that come from each group.



Colours and Varieties - Red/Pink/Brown

The common red/pink variety of garnet you see is called a Rhodalite garnet, see below. Other red garnets are Pyrope and Almandine. A Rhodalite garnet is a mixture of a Pyrope and an Almandine garnet.

Pyrope garnets are red, Almandine garnets are more brown. The colour of a Rhodalite garnet is determined by how much pyrope or almandine is in the stone - which is how you get so many different colours.

Colours and Varieties - Orange/Salmon/Brown

Garnets that come in orange, light pink, light brown and a combination of these colours are: Spessartite, Hessonite, Malaya, Mandarin and a

few other rare varieities. The first three are more common and come in a range of oranges and browns. Malaya garnets have a particular lovely colour range in salmon pinks shown in the image below. Malaya garnets come from the Umba River Valley between Tanzania and Kenya and are a mix of Spessartite and Pyrope.

Spessartite garnets come in many different orange/red colours and look great in rings and as pendants. See below

Hessonite garnets are from the same group of garents that the Tsavorite garnet comes known as the Grossular garnet group. They are a rich honey brown/yellow garnet that has a specific inclusion known as “treacle” or oil in water, that can give the garnet a hazy appearance. This helps in identifying a hessonite garnet.

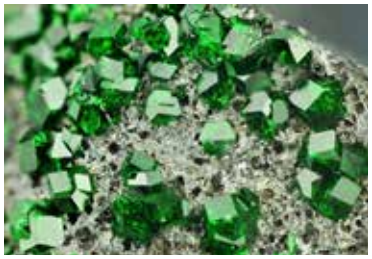
Colours and Varieties - Yellows and Greens

There are quite a few different yellow and green varieties of garnets, including Tsavorite, Demantoid, Uvarovite, Andradite and Topazolite. The important garnets in this list is Tsavorite and Demantoid. The gemstones in the next image show the variety of greens and yellow greens of the Tsavorite garnet.

Tsavorite garnets come from only one place in the Tsavo national park in Tanzania. The green is caused by traces of chromium or vanadium and is often mistaken for Emerld, who’s colour is also from traces of these same elements. Tsavorite garnets make an excellent Emerald replcement if you cant afford an Emerald.

The other important green garnet is the Demantoid garnet, see below. These garnets are the most prized garnet for their colour, rarity and beauty, but some Demantoids are valuable due to a rare inclusion called a horsetail that can be found within. This is not usual in gemstones, as inclusions usually lower the value.

The horsetail inclusion, named as it looks like a horsetail (see below left), tells you three things: a. it is a demantoid, b. it is from the Ural mountains in Russia and c. it is genuine. Demantoids come in greens and green yellow colours, due to having trace elements of Chromium. Demantoid garnets have very high lustre and dispersion and display amazing fire.



Garnets (cont.)

Uvarovite garnets are a beautiful dark green, but sadly are always two small to facet. These are often sold as crystals on the matrix in small clusters. See image above right.

Andradite garnet is green/yellow variety, but not as common as the other green garnets. The Demantoid garnet is a variety of the Andradite group. Topazolite is a yellow variety from the Andradite group and is also not very common.

Colours and Varieties - Other

Other colours available are purple, a colour-change variety, black known as a Melanite garnet also from the Andradite group and a rare blue garnet discovered in Madagascar in the 1990's. Below shows a lovely purple garnet from a mix of pyrope and almandine.

Garnets are also available as star garnets. The star is caused by what is known as "silk" inclusions in the garnet and is only visible if the stone if cut as a cabachon. See images below.

Garnet Groups

The six different garnet groups can be divided into two groups: The Aluminium group and the Calcium group. The differences between the two groups are the aluminium group contains aluminium as its constant element in the composition, while the calium group contains calcium as its constant. The aluminium group is known as the "Pyralspite" group and the calcium group is known as the "Ugrandite" group. These two names come from a mixture of each of the three sub group names within.

Pyralspite group
- Pyrope (Pyr)
- Almandine (Al)
- Spessartine (Sp)

Ugrandite group
- Uvarovite (U)
- Grossular (Gr)
- Andradite (An)

The following table gives you the formulas

name	formula	subgroup
Pyrope (Py)	$Mg_3Al_2(SiO_4)_3$	pyralspite
Almandine (Al)*	$Fe_3Al_2(SiO_4)_3$	
Spessartine (Sp)†	$Mn_3Al_2(SiO_4)_3$	
Grossular (Gr)‡	$Ca_3Al_2(SiO_4)_3$	ugrandite
Andradite (An)	$Ca_3Fe_2(SiO_4)_3$	
Uvarovite (U)§	$Ca_3Cr_2(SiO_4)_3$	

Garnet Crystals

Garnets are cubic in structure, which means the crystals are the same dimensions in any direction. The grow in a dodecahedron shape typically with 12 or 24 sides or faces. See below.

General Information

The more common garnets of Rhodalite, Almandine and Tsavorite are just that reasonably common. They are less expensive than other gemstones of silimilar colours and are hard enough to be worn in all types of jewellery, with their hardness ranging from 6.5 to 7.5 on the scale of hardness. Garnets are readily available and worth considering for your next project.

Synthetic Garnets

Most of our main gemstones have synthetic or imitation varieties, because of the availability and the low cost of most garnets, it is not worth creating synthetics, generally. So when I talk about synthetic garnets what exactly do I mean?

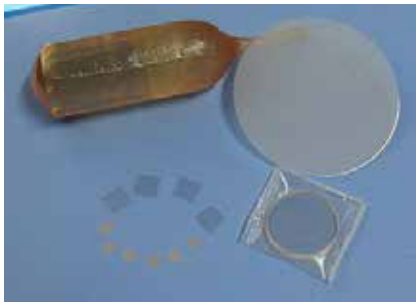
Synthetic garnets are grown and are mainly used to imitate diamonds. The main difference between a garnet and a synthetic garnet is, a natural garnet is known as a silicate - silicone is required in its chemical composition to form, where as synthetic garnets are oxides - with no silicate required to form. So why are they called synthetic garnets, when they are actually not garnets? The only reason is due to a vaguely similar chemical composition of the different varieties that can be classified into groups.

Varieties of synthetic garnet are known as YAG, YIG and GGG or Yitrium Aluminium Garnet, Yitrium Iron Garnet and Gadlinium Gallium Garnet. They are generally colourless, but can be doped with other elements to make colours and make reasonable diamond simulants. With the development of cubic zirconia and synthetic moissanite, YAG and specifically GGG, used more for industrial purposes, are not used as much anymore as diamond simulants, but can be found in older or antique jewellery. They can be detected with a diamond tester. The image below shows some YAG crystals.

As you can see be the image on the right, a synthetic garnet crystal looks nothing like a natural garnet.

They are used heavily in industrial use and specifically in lasers.

The image on the right is of a GGG crystal and also shows the crystal substrate.



The images below show some facetted synthetic garnets. You can see why they were used as diamond imitations. The image on the left is a YAG, the image on the right is a GGG

Gem Identification

Identifing gemstones can be a tricky thing. The majority of people would only know of a few gemstone varieities, such as Ruby, Sapphire, Emerald and Diamond. Possibly some would know Topaz, Garnet, Aquamarine and Tanzanite. Because of this lack of knowledge it is very common for gemstones to be mis identified. Just in the list above, tanzanites, sapphires and aquamarines are all blue, so how do you tell the difference.

I spent three years when gaining my diploma in gemmology and diamond technology learning how to identify gemstones and how to distinguish synthetics and imitations from the real thing. Gemstone identification is not something that can be learnt quickly, it takes time and practice

Starting in the first edition of the bendigem for 2018, I will be doing a course on gemstone identification. This is only an introduction and will help you to learn what to look for when trying to do identifications. There will be instances when you wont be able to identify the gemstone without specific tools and equipment. but with the use of some simple tools that you can carry around with you, you can at least begin to get some experience.

Gem Identification (cont.)

What do you need to be able to identifiy gem-stones?
You will need:

- triplet 10x loupe or hand lens corrected for distortion and colour.
- a lint free cloth for cleaning the stones
- a good pair of jewellery tweezers

Once you gain more experience, you can learn to identify with just three peices of equipment.

Other tools used for identification are:

Dichroscope, Spectroscope, Microscope, Refractometer, Specific Gravity scales, Ultraviolet light, both long wave and short wave, Polariscope and a Chelsea filter.

Other forms of identification are hardness scribes, magnetisim, inclusions and in some cases even colour.

Some gemstones can be easily identified with just a hand lens particularly if that gemstone has an inclusion that is specific to that gemstone, such as the horse tail inclusion in the Demantoid garnet.

Other gemstones, such as Tanzanite can be easily identified using a Dichroscope and sometimes just with the naked eye, as tanzanite has a specific colour combination or purple and blue.

A Chelsea Filter can help to seperate synthetic spinel from Aquamarine, or Burmese Rubies from Thai Rubies. A Polariscope can seperate Rubies from Spinels

There is a lot to learn regarding identification, and you should never identify a gemstone based on one test only, unless your results are specific to that gemstone. I look forward to sharing this with you and hope you will enjoy the information.

AGM

Our Annual General Meeting will be held Friday the 17th of November at 7.00pm at the club rooms.

We ask as many members as possible to attend. This is where you can have your say on any issues or ideas that you wish to discuss.

You may wish to nominate yourself or someone else for a position on the committee. Its good to share the committee roles and not leave everything to the same people all the time.

Please bring a plate for supper and make sure you put your names on the attendance list for the Christmas Party on Monday the 4th December while you are there.

Lets all get involved and make our club active, busy and a great place to meet for social get togethers!!

We look forward to seeing you there!!

When: December 6th @ 7.00 pm

Cost: $32

Where: Queens Arms Hotel, 25 Russell St, Quarry Hill VIC 3550

Dress Theme:
To be advised.

Bookings close Nov 24th, and must be prepaid to Sandra
Please put your name on the list at the club rooms.

Hope to see you there!!

General Information

What Am I?

This is a very special one. Any ideas?
Email lea with your answer: secretary@gem-bendigo.org.au

Answer next edition.
Last months crystal was a lovely Aquamarine crystal

Silver Casting Dates

Silver Casting Dates for 2017 are:

18th Nov

Please register on the form at the club

Silver Casting dates for 2018 will be set soon and will appear in the next Bendigem

Field Trips

Date: January 14th 2018

Spring Gully Graptolite Fossile Fields

Meet at the club at 8.30 am for 9.00am departure

Water, Hats & Sunscreen required
Closed in shoes only

Contact Al or John regarding equipment.

Upcoming Events

November

16 Committe Meeting. Club Rooms. 7.00pm
17 AGM (Including election of officers) Club Rooms. 7.00
19 Cheong Park Gem & MIneral Club Rock Swap, Crn Bayswater & Eastfield Rds, Croydon Sth
25 Australian Fine Mineral Show, Melbourne Go to www.afm.com.au for more details.

December

6 Christmas Party, Queens Arms, 6.30 for 7.00pm start
15 End of year committee meeing. Club Rooms. 7.00pm

January 2018

6-7 Warrnambool Gem Club Gem and Mineral Show, Primary School Hall Cnr Jamieson St & Princess Hwy, contact: wgemclub@westvic.com.au
20-21 Warragul Lapidary Club Gem Show, Yarrogon Hall, Campbell St, Yarragon. Contact: Karen 0438 283 238 or Ruth 0427 287 555

Gemborees

2018 30 March - 2 April, Willunga, South Australia
2019 Queesland
2020 Victoria

Our supporters