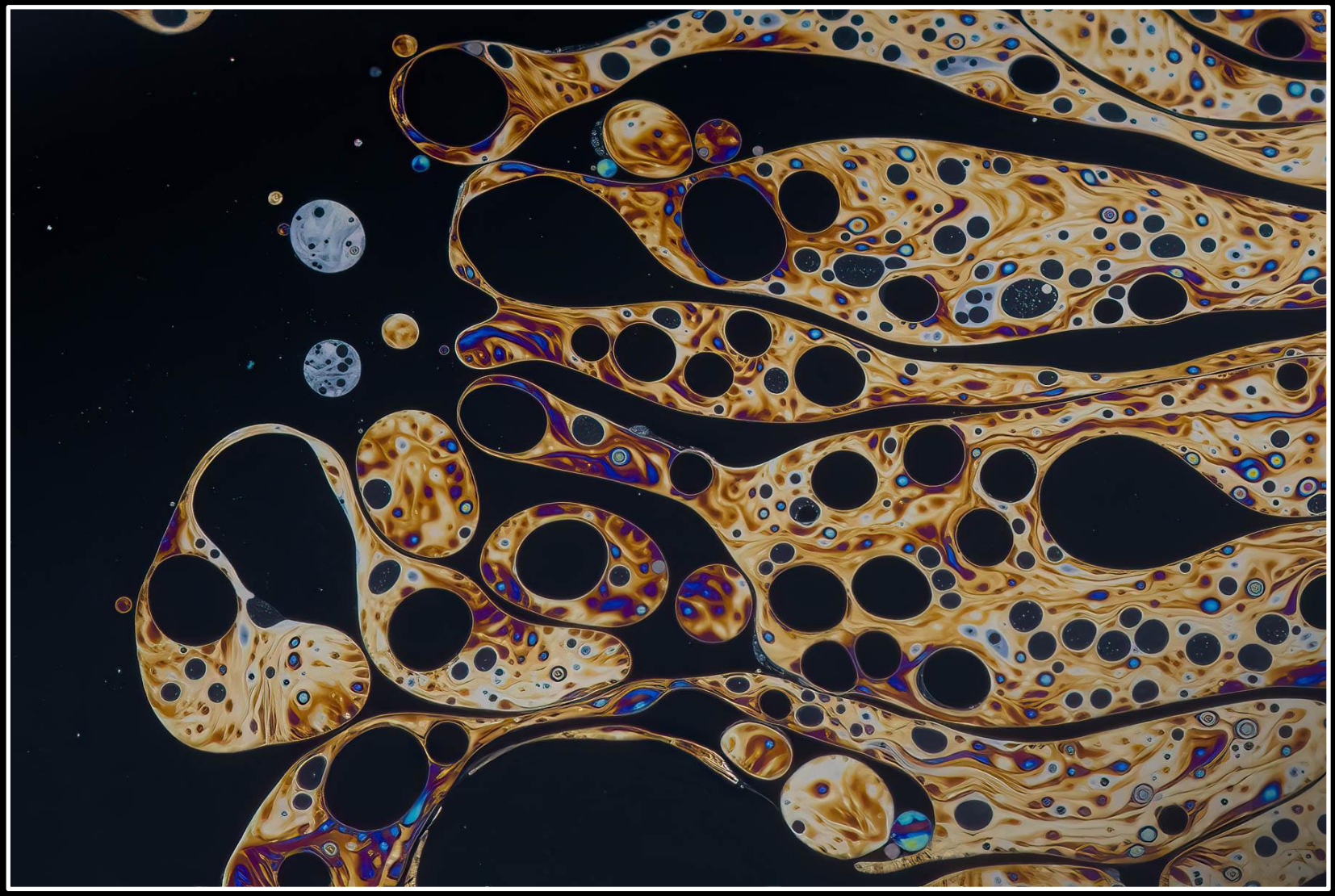
Macro Photography



greg mckenzie - g.mckenzie@hotmail.co.nz - https://www.facebook.com/greg.mckenzie

Macro Photography

- Wikipedia says the definition of Macro Photography is extreme close-up photography, usually of very small subjects, in which the size of the subject in the photograph is greater than life size.
- Macro photography geeks say that macro photography is only when you get a 1:1 ratio of the image size on your camera's sensor compared to the subject size .
- A more common usage is, any close-up photography where you can see the details of your subject in a much more intimate way than you would with the naked eye.

- Macro is life size, or larger, on the sensor. Most macro lenses allow life sized images. Some allow twice life size.
- Ultra macro 1.5x to 5x (ie 1.5:1 to 5:1) There are a small number of these lenses available.
- Microphotography - greater than 5x

1x is shown as 1:1 ratio
2x as 2:1
5x as 5:1



Club definition

"Macro photography is all about showcasing a subject larger than it is in real life – an extreme close up of something small or a particular detail.

There are no editing restrictions. A macro lens is not necessarily required – think outside the box!"

Why do Macro Photography?

- You can take macro photos anywhere, anytime of year, and you don't need a lot of room.

- The camera gear you need can be very simple-You don't have to use an expensive macro lens.

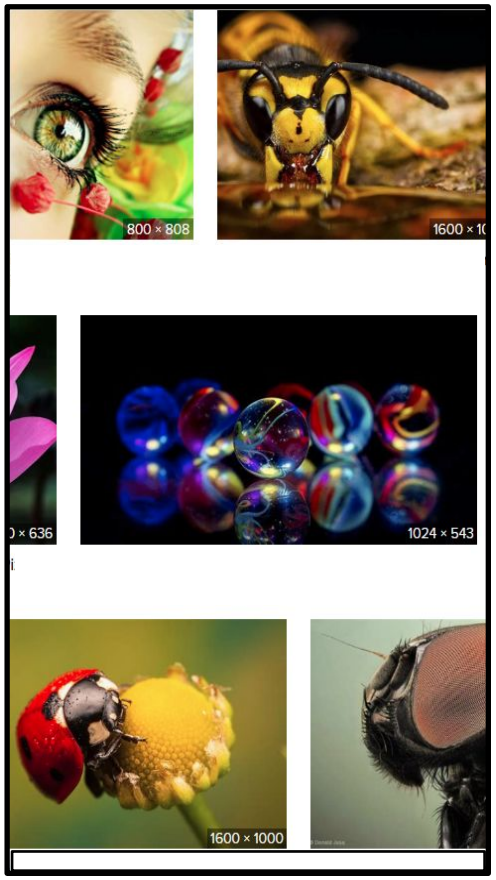
- You can easily experiment with different ideas, and see your results instantly.

- It’s fun!

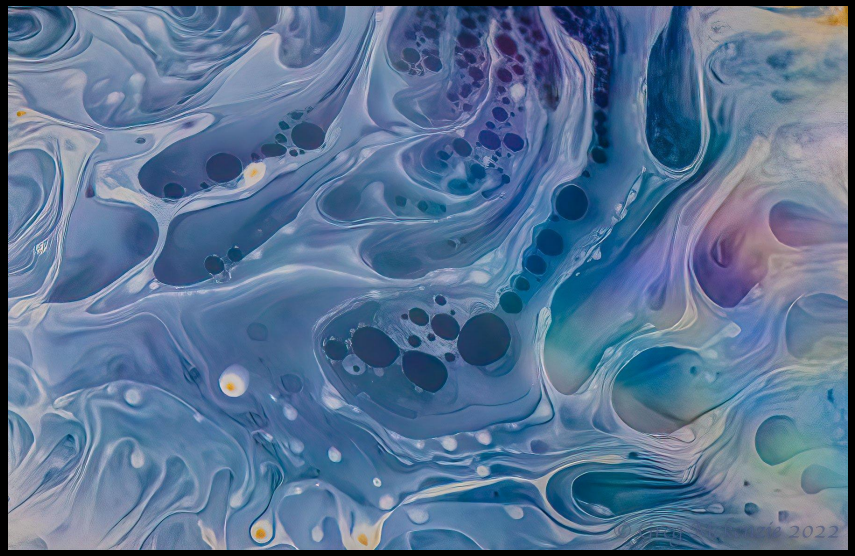


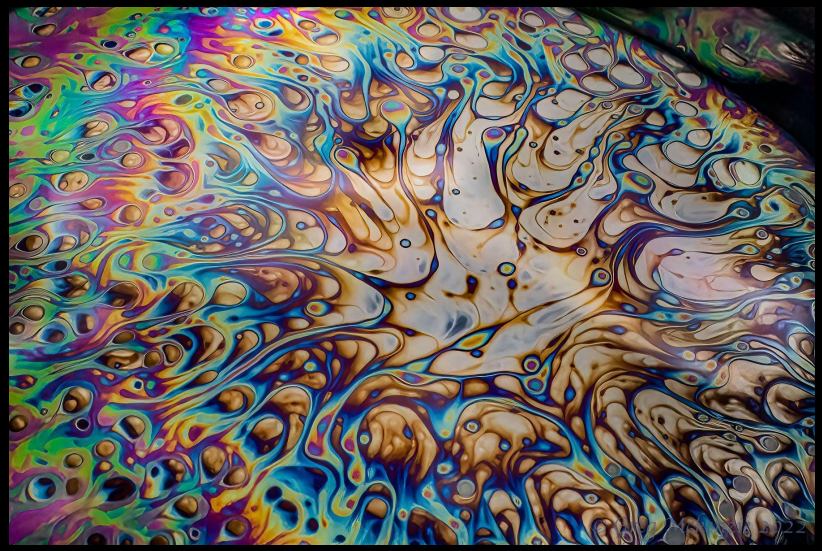
Macro photography Subjects

- Fungi, lichens, mosses
- Soap/oil/water bubbles
- Feathers
- Abstracts and textures
- Flowers
- Insects and spiders
- Water drops
- Small details of larger objects

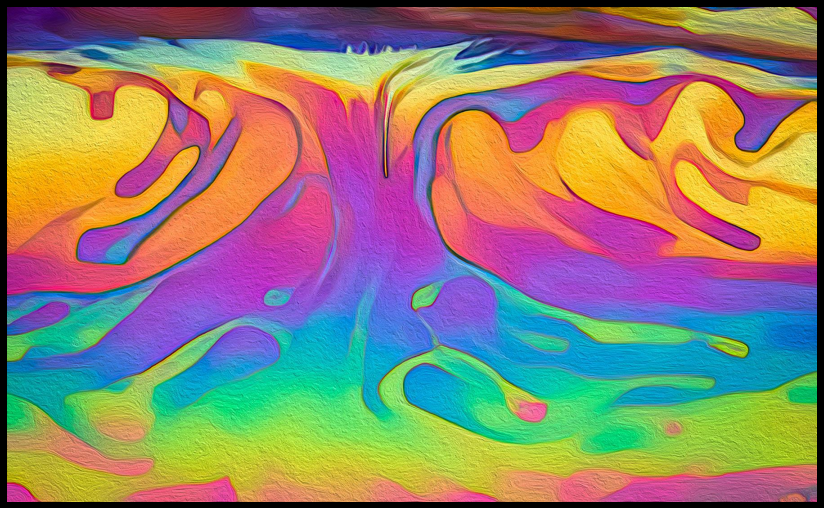


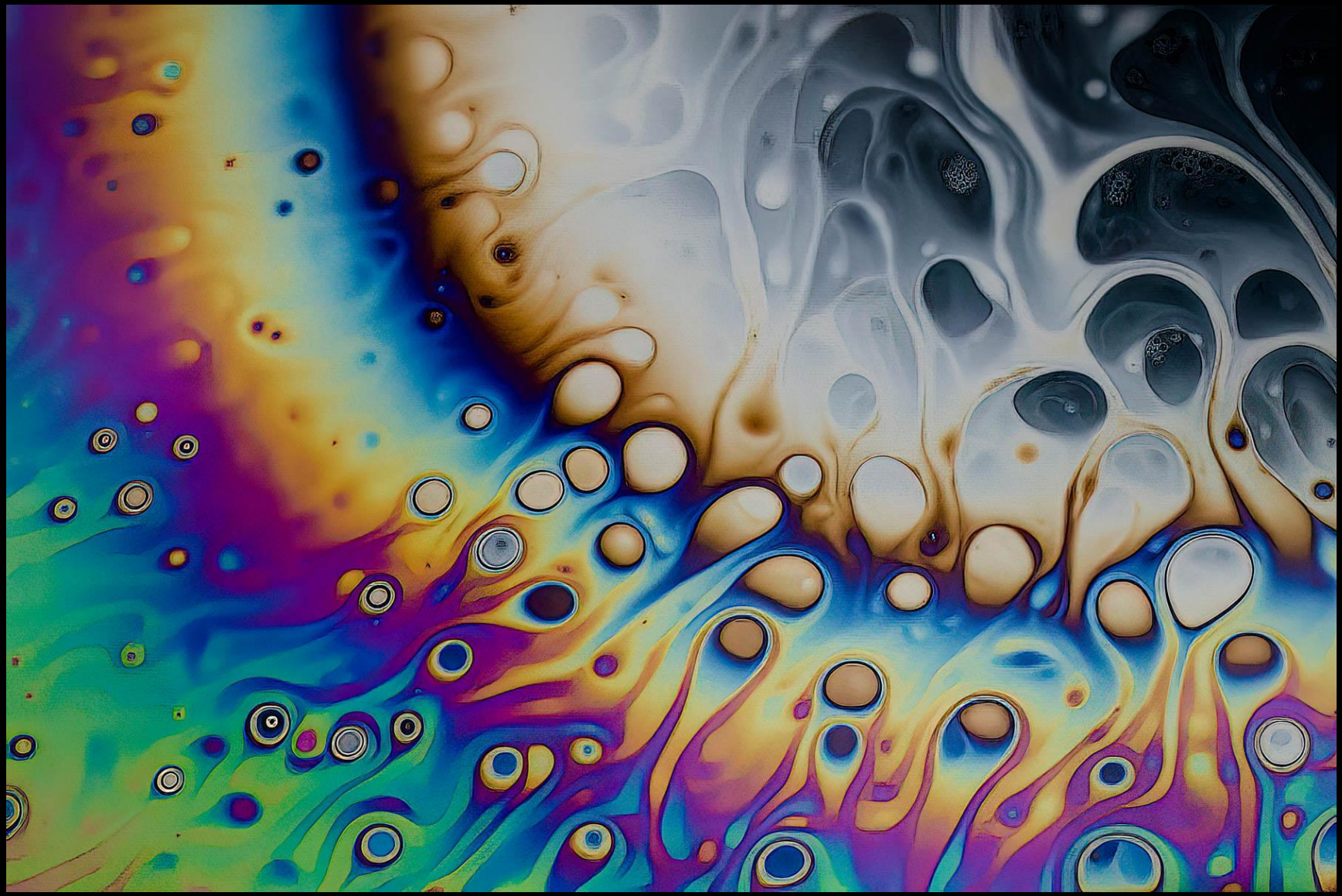
Soap Bubbles











My Setup


Flash bouncing off ceiling
I'm using wireless flash triggers but it's also good with a wired remote flash
Large diffuser
Black paper behind dish
Bubble(s)
Camera on tripod
Small dish with soap solution
Long straw

Fungi







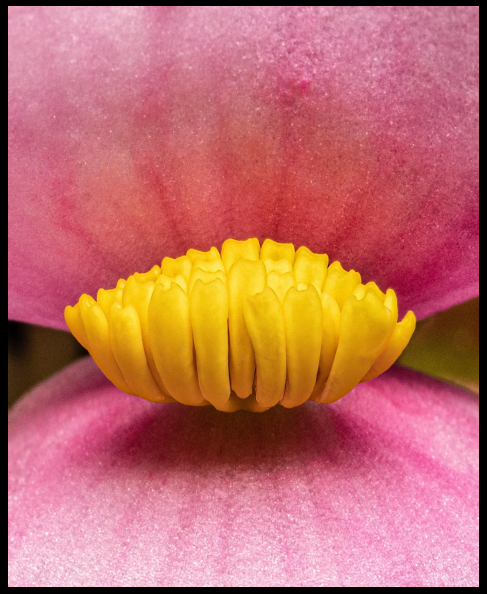




Slime mould fruiting bodies - about 1.5mm tall - 14 stacked photos

Flowers









100 mm macro stacked



Laowa 15mm macro lens @f32. The front of the lens was touching the petals

Insects





Tamron 28-75
@75mm f8





Sony 100-400
400mm f9



25mm macro 2.5x

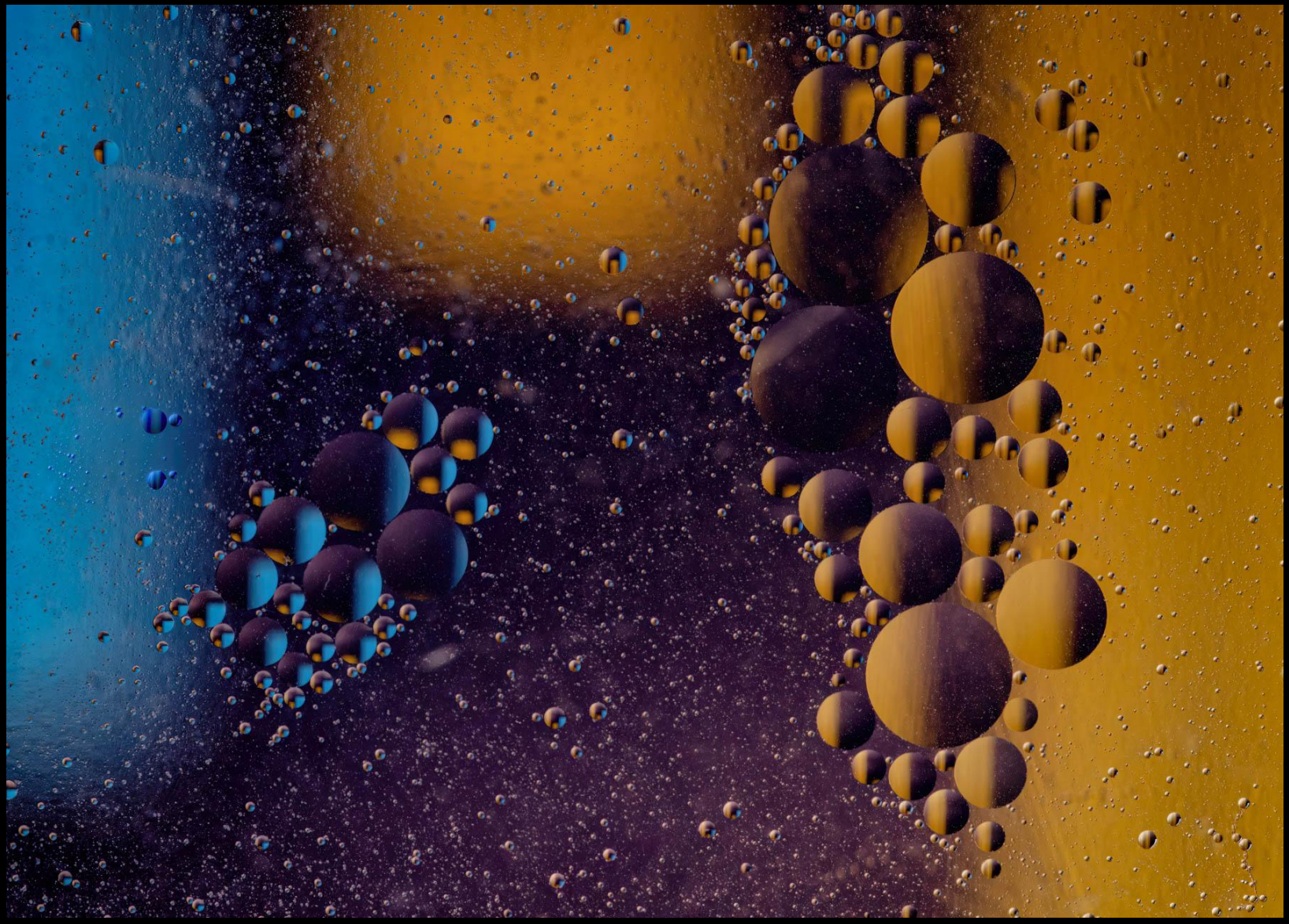


Composite of two photos, hand-held at 2:1



Canon 100mm macro @ f8. Handheld, merged 6-8 shots.

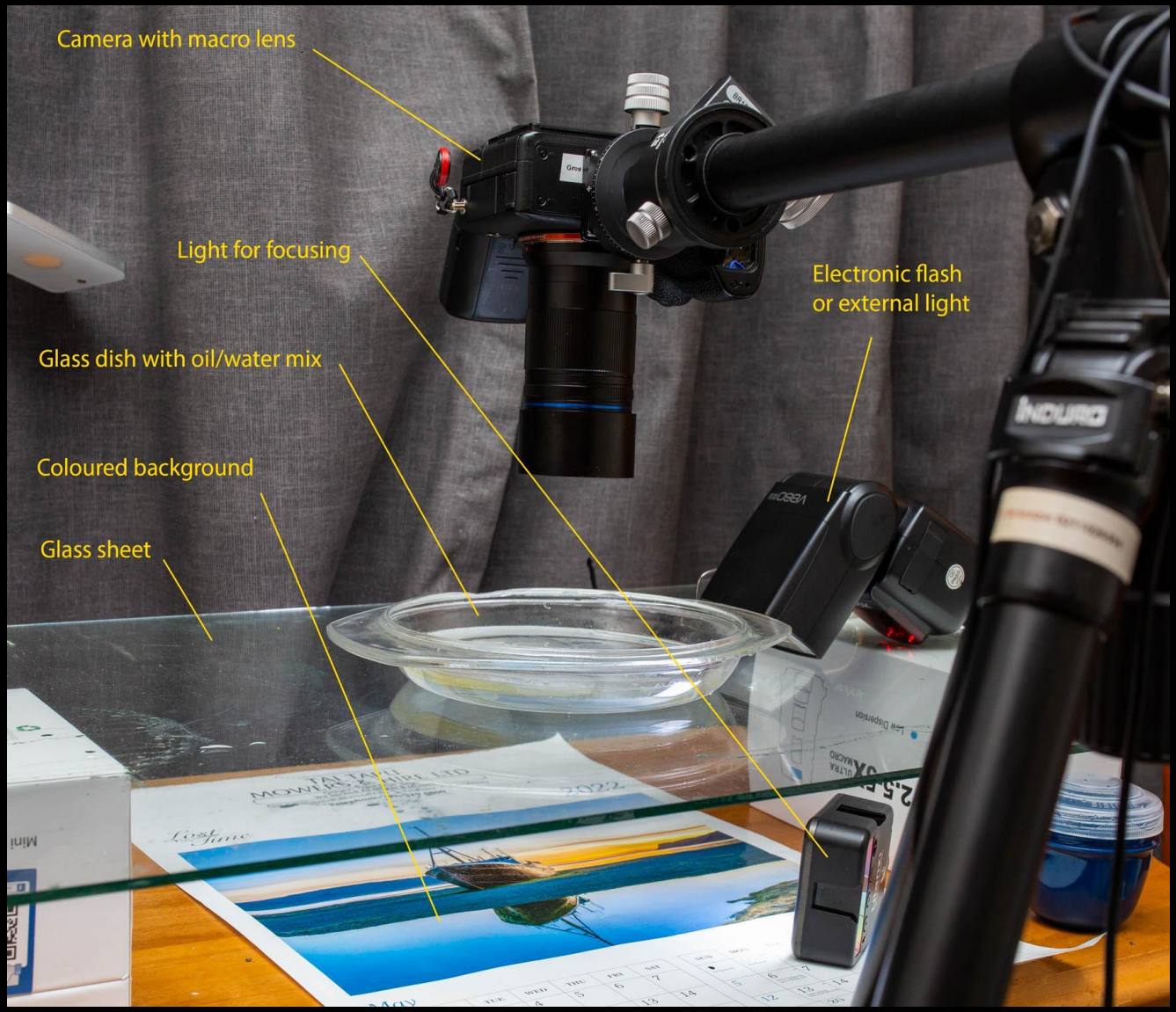
Oil drops in water




© Greg McKenzie 2012

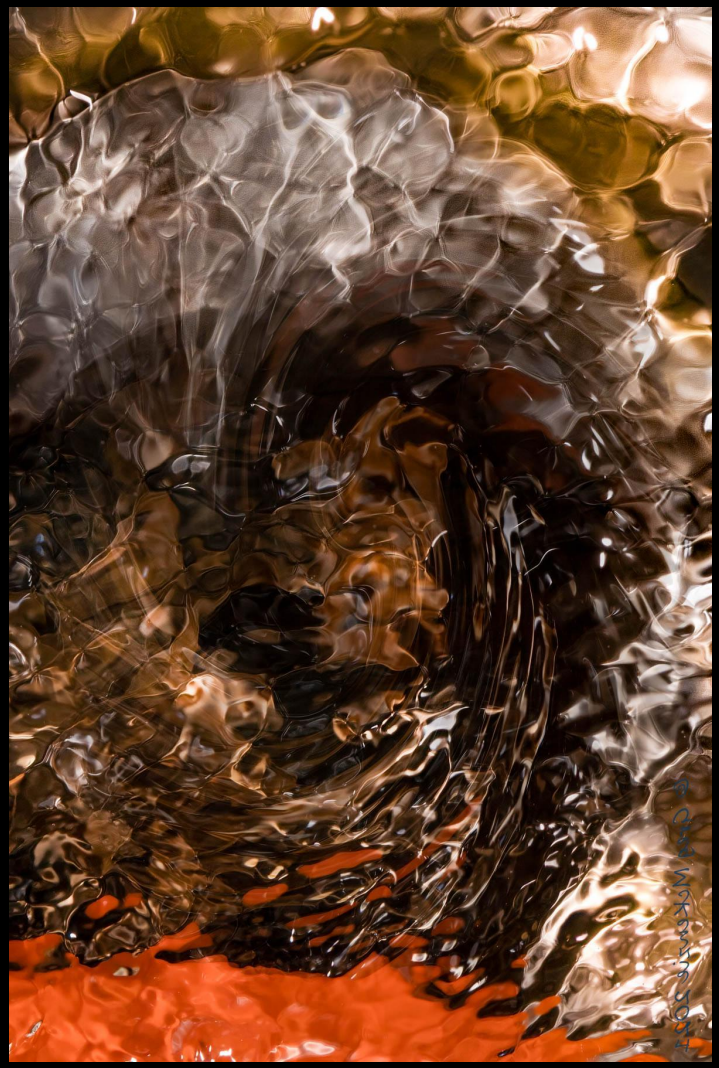


Oil Bubble setup



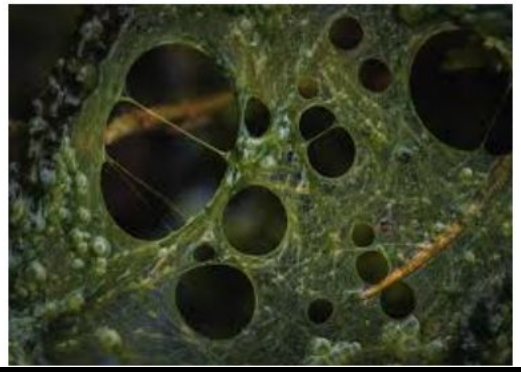
Water drops

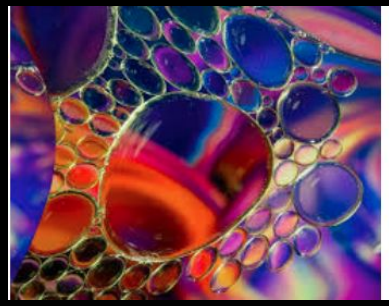




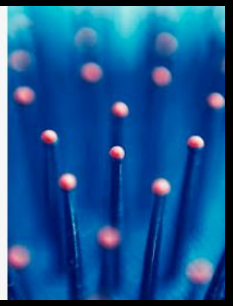


Abstract macro photography







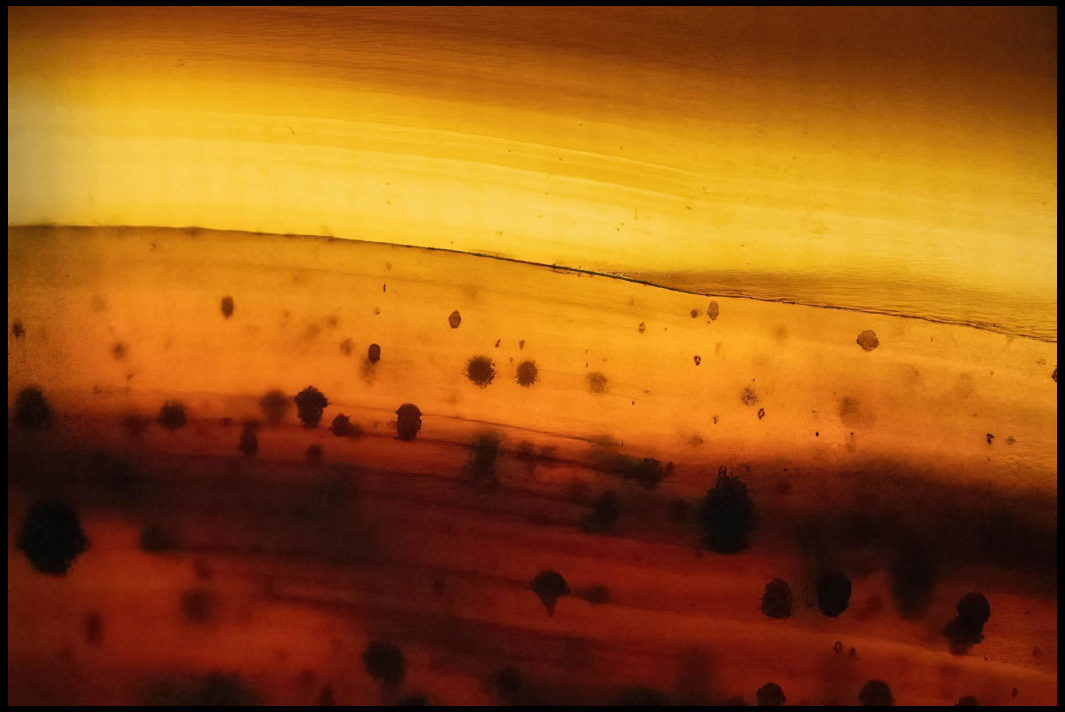


From Google search for ‘bstract photography’

Rocks and Minerals

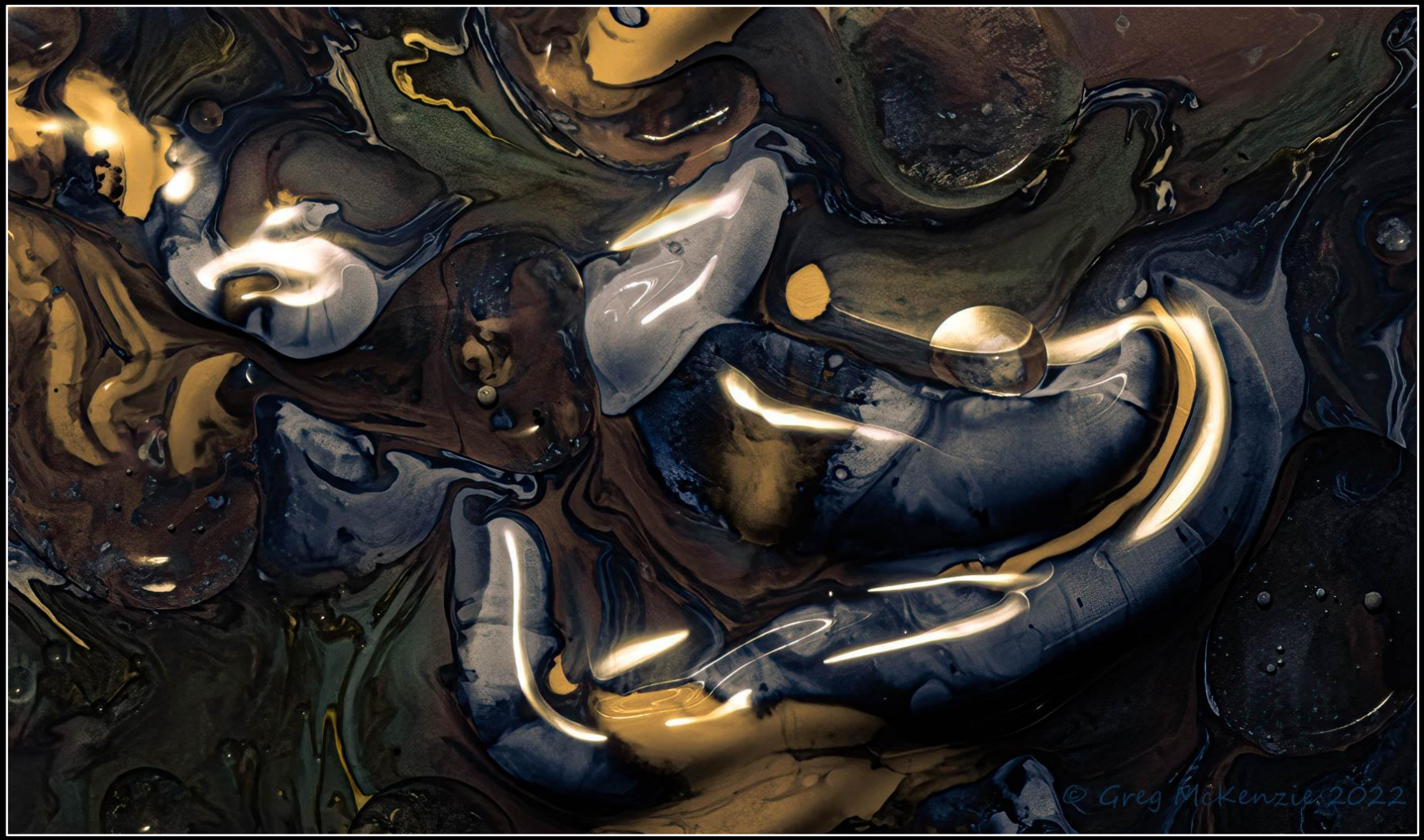






Milk, acrylic paint, oil and detergent




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Getting close - Macro lenses

- Most go to 1x or 1:1 magnification.
- Some go to 2x (2:1)
- A few go to 5x (5:1)

- Longer focal length allows longer working distance and smaller depth of field
- Higher magnification results in shorter working distance, smaller depth of field, and a darker image

Getting close - Other methods

- Extension tubes
- Clip on close-up lenses - eg Raynox DCR-250 Super Macro Snap-On Lens
- Reversal and coupling rings
- Cell phone with clip-on macro lens
- Use 100-400mm lens as close-up lens
- Cropping from a high megapixel sensor

Comparisons



100mm macro lens



70-200mm lens

Cell phone with magnifying glass







The lens needs to be parallel to the camera lens, you will need to crop to the centre and probably apply sharpening

My macro gear



Fungi setup



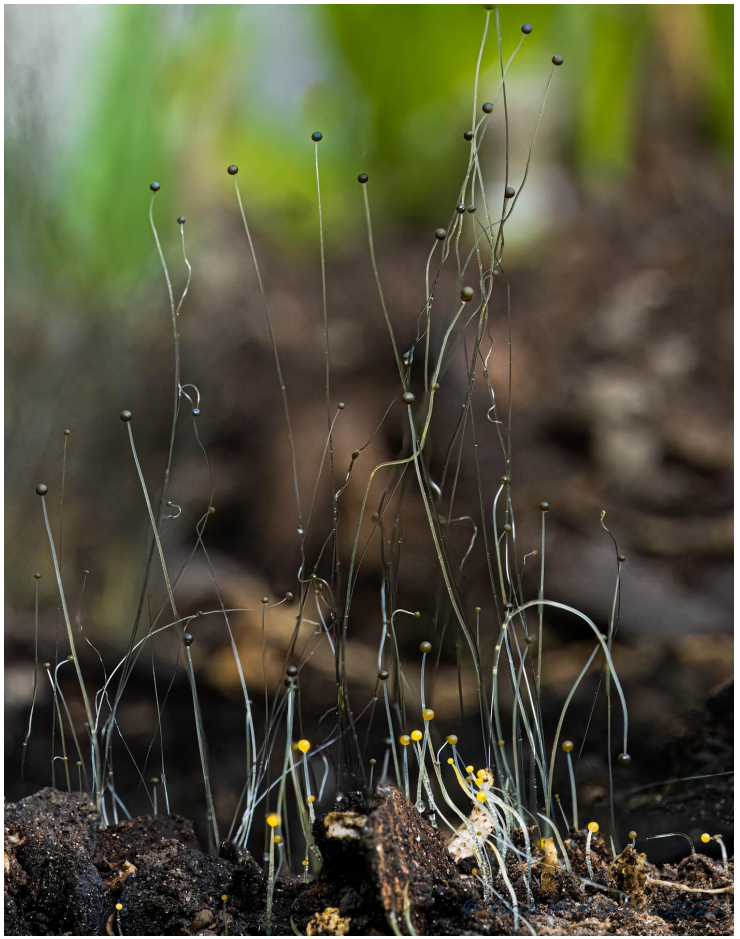
Where to Start

- Macro lens, extension tubes or closup lenses
- Camera on manual
- 1/100-1/200s shutter speed
- f8-f11
- Manual focus
- Base ISO usually 100
- Electronic Flash - manual at about 1/16th power - you will need to adjust the settings.
- Diffuser, fill light, tripod or bean bag.
- https://www.youtube.com/watch?v=RRJ9iopSUO4

Focusing

- Manually set approximate focus.
- Fine tune focus by moving the camera back and forth.
- Focus peaking? - maybe
- Focus magnification is very useful for static subjects.
- Don’t use high f numbers - this is to avoid diffraction softening - up to 1x magnification use f8-f16, 2x magnification use f5.6-f8.
- You may need to consider focus stacking.

- Often rear screen has lower resolution than the internal viewfinder.
- Keep glasses handy!
- Use magnification
- Focus stacking – here 4 images stacked while it was windy



Focus stacking - Experimentation

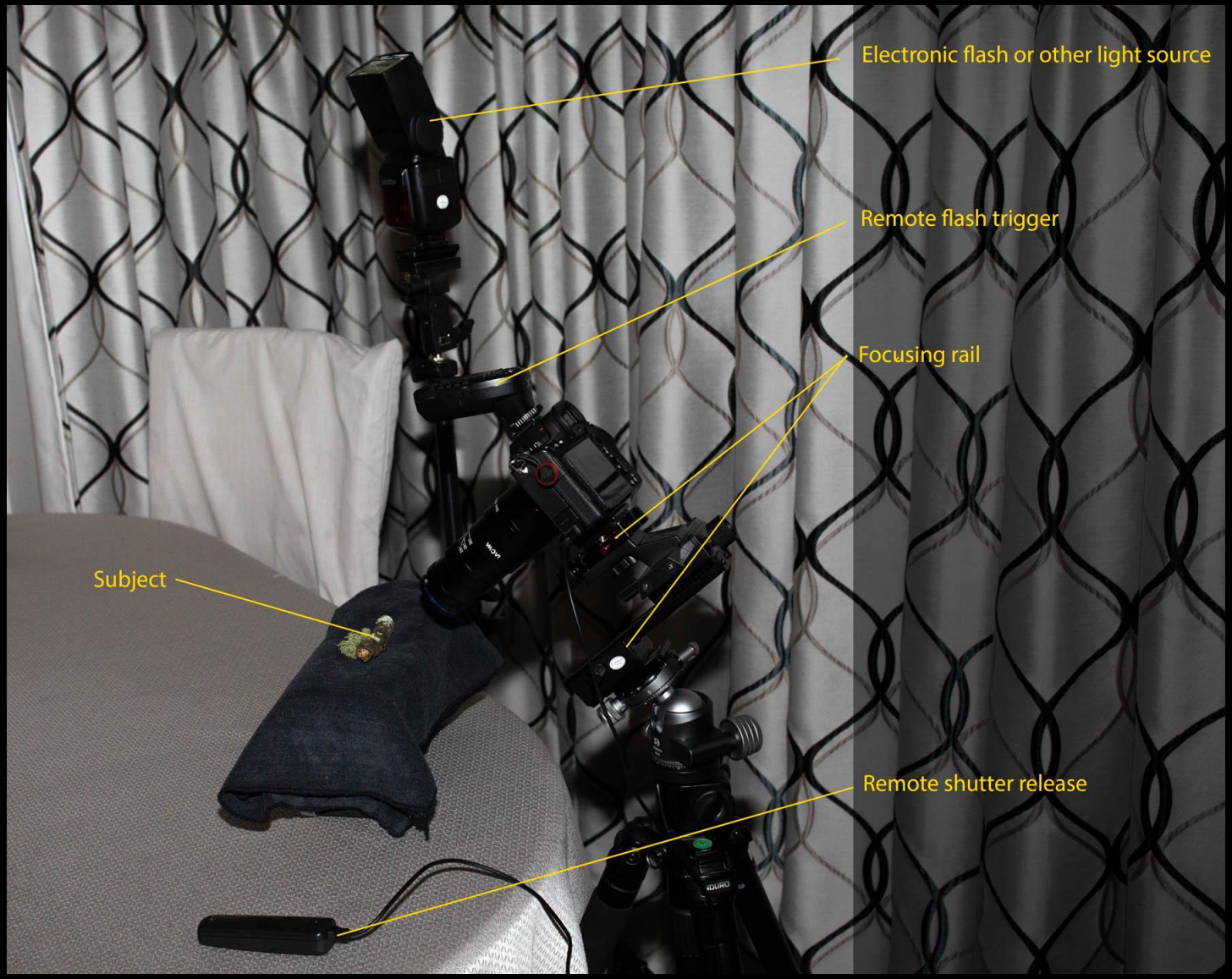
- 75 stacked images - 100mm macro at f2.8



My Method

- Braced Hand-held, bean bag, tripod.
- Low level shots - use the rear screen .
- Viewfinder shots may require you to get down low!
- Focus peaking settings may vary according to contrast, view - viewfinder or rearscreen.
- Diffused flash for most shots.
- Focus stacked - gently rock back and forth or if braced, manually change focus in small increments - or use a focusing rail.

Focus Stacking Setup



f-stop and sharpness

- Depth of field can be very small eg 0.5mm or less.
- Diffraction effects - small apertures lead to softer images
- At extreme magnifications the real aperture can be much higher than the apperature set on the lens, this can lead to extreme diffraction softening.
- Effective f-stop = f-stop x (1 + Magnification)
  eg for 2x magnification and lens set at f11

  Effective f-stop = 11 x (1+2) = f33

Resources

- https://www.youtube.com/watch?v=YTl9-VWe1xg
- https://www.youtube.com/watch?v=8CbfL4fvH6M
- https://www.naturettl.com/photography-tutorials/macro/

- https://www.youtube.com/c/MicaelWidell
- https://www.youtube.com/user/terser
- https://www.youtube.com/c/MacroRoom
- https://www.facebook.com/groups/CreativeMacroClub/

Addendum

F-stop and Diffraction softening

f8


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