MACRO PHOTOGRAPHY

What is Macro Photography?

- True Macro is taking a photo at 1:1 Ratio

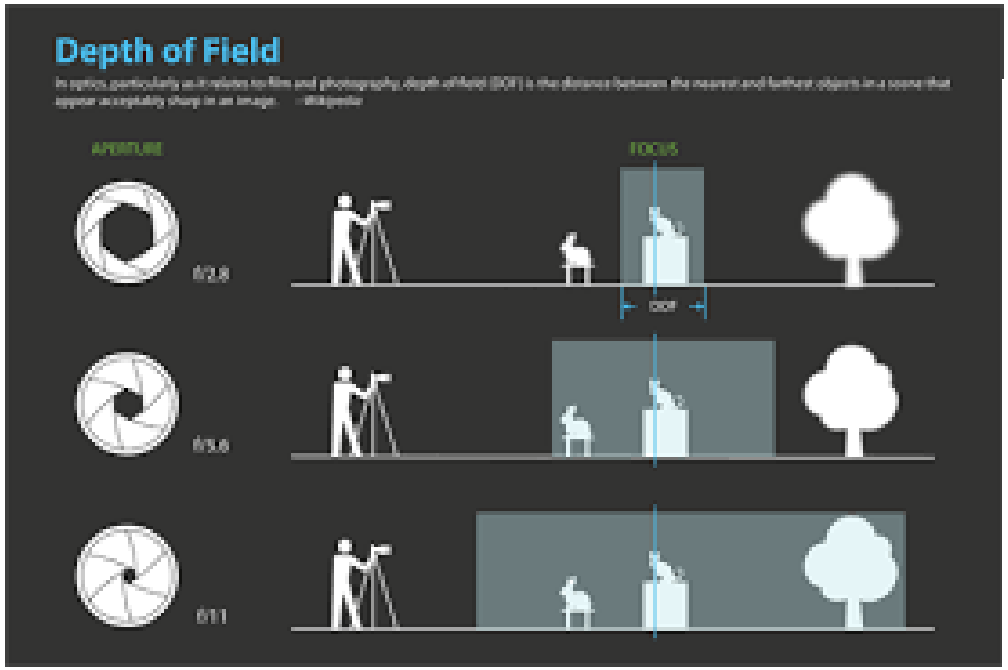
That is the image being recorded on the sensor is life size

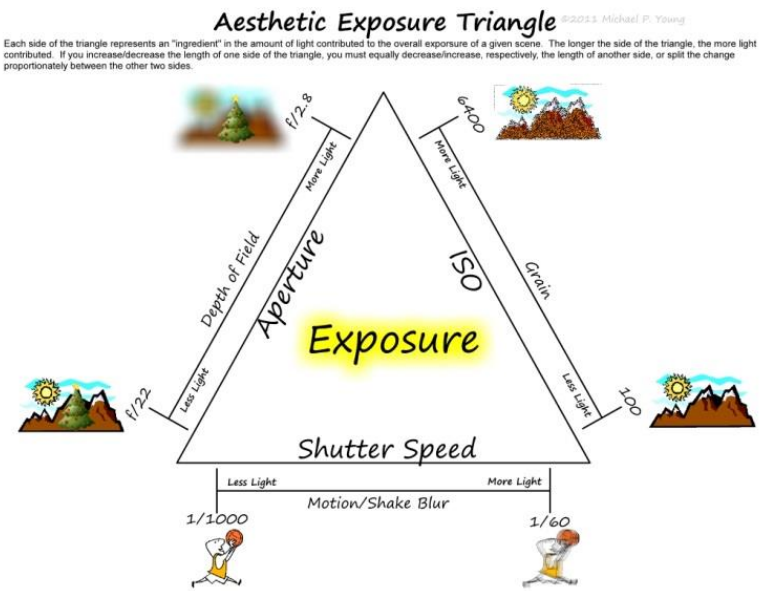
- Some telephoto lenses claim to be Macro –

  They are not true Macro as most have a maximum ratio of 1:2, some even less

- In these cases what the manufacturer is saying is that the lens is capable of focusing closer than a normal telephoto lens.

Depth of Field (DoF)





Normal focus for a lens is
1/3 in front / 2/3 behind
the target – as depicted by the blue line
in the image above

Macro Kit Requirements

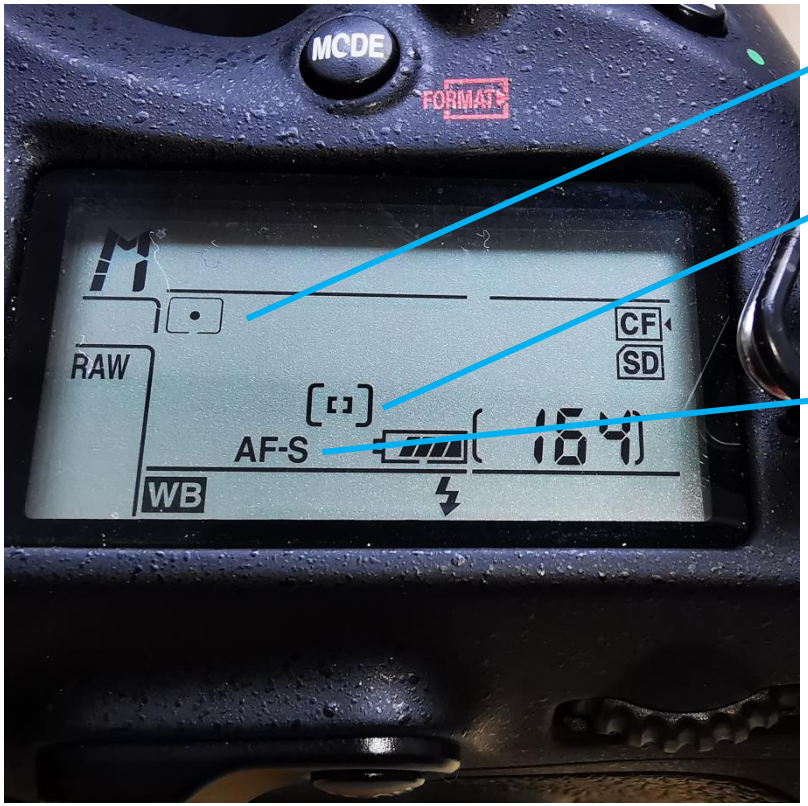
Camera Supported

- Tripod and/or Beanbag
- Macro Lens
- Remote shutter release (self-timer can be used)
- Reflector or Macro Flash

- Optional – For focus-stacking a measured rack makes it much easier and more accurate.
- Alternative to Macro Lens – A reversing ring fitted to a 50mm or 80mm prime lens.
  This allows the lens to be fitted backwards making a pseudo macro. It is crucial that the lens has manual focus and aperture control as the lens electronics will not work. Used ones are cheap.

Camera Settings

for Supported Camera

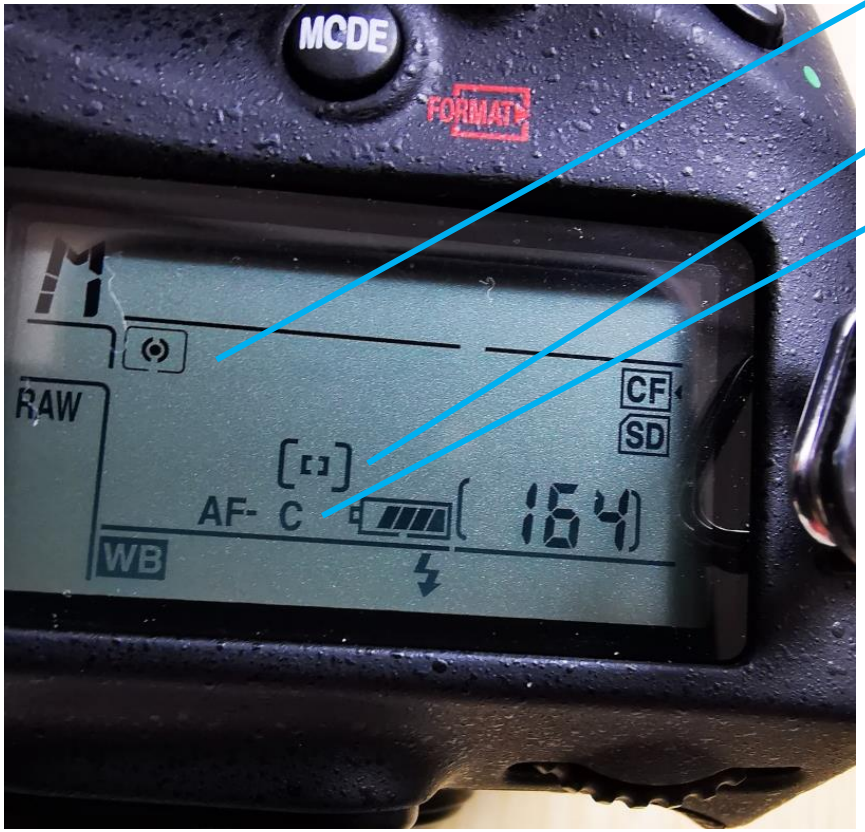


- Metering set to either Spot or Center-weighted
- AF Area set to Single Point AF
- AF set to Manual preferred. Auto is optional
- AF Mode set to Single Point
- Aperture as small as possible to maximise depth of field *(Increase ISO if necessary)*
- Image Stabilisation - OFF
- ISO as low as possible
- Shutter speed as required

Macro Kit Requirements
Hand-held

- A steady hand
- A good camera strap to brace the camera
- Macro Lens
- Reflector or Macro Flash– *with Macro you spend a lot of time in the shadow of your own lens. (Baking foil over a piece of card makes a good reflector).*
- Learn to hold your breath before you press the shutter
- Learn Back-button focusing – it really helps with Macro. *Good for all other genres as well.*

Camera Settings
Hand-held



- Metering set to either Spot or Center-weighted
- AF Area set to Single Point AF
- AF Mode set to Continuous
- Shutter speed as fast as possible, at least =/> Lens Focal Length ie 60mm lens 1/60sec *(Increase ISO as required)*
- Aperture as small as possible to maximise depth of field *(Increase ISO if necessary)*
- Image Stabilisation - ON

Macro Lenses – What is different

- Macro lenses have an additional scale in the focus window
- This provides a reference to the scale factor at that focus point.
- You can easily work in the shadow of your own lens/lens hood
- At macro range a normal camera mounted flash gun (strobe) is useless because the majority of the light misses the target object.

Macro Lenses – What is different

Most lenses have the maximum focus around the infinity point

Macro lenses are engineered to provide the maximum sharpness at the 1:1 ratio. The opposite end of the scale to normal

QUESTION –

For the less experienced

Experienced photographers please do NOT answer

I have brought two cameras with me –

One is a crop sensor (1.5 crop) camera fitted with a 60mm Macro lens

The other is a full frame camera fitted with a 90mm Macro lens

Other than both being Macro lenses on Nikon Cameras what do the two camera/lens combinations have in common?

QUESTION –
For the less experienced users only.

I have brought two cameras –

One is a crop sensor (1.5 crop) camera fitted with a 60mm Macro lens

The other is a full frame camera fitted with a 90mm Macro lens

Other than both being Macro lenses fitted to Nikon cameras what do the two camera/lens combinations have in common?

Answer – Both are exactly the same focal length

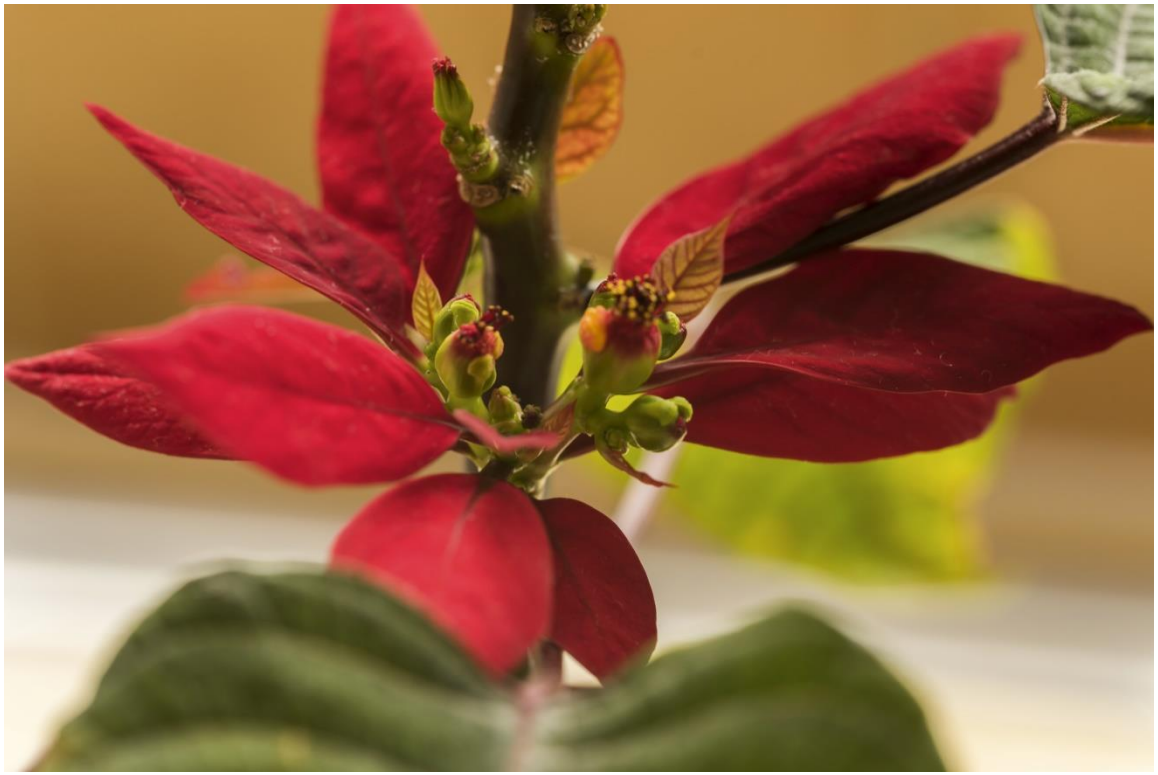
60mm x 1.5 crop = 90mm Full frame 90mm x 1.0 = 90mm

Minimum Focal Distance Comparison

50mm Prime Lens
ISO 100
f2.8
1/50 sec
Tripod Mounted
Lens at minimum focus distance
0.45m (1.48ft)

Minimum Focal Distance and DoF Comparison

Focal Distance Comparison



90mm f2.8 Prime Macro Lens
ISO 100
f5.6
1/15 sec
Tripod Mounted
Lens at 1:2 focus distance
0.38m (1.3ft)

Note that although the lens is a prime (not a zoom) the widest aperture available at this scale is f5.6. The f2.8 max aperture is not available throughout the focus/scale range.

Focal Distance Comparison

90mm f2.8 Prime Macro Lens
ISO 200
f4.2
1/500 sec
Tripod Mounted
Lens at 1:1 focus distance
0.3m (0.95ft)

Note that although the lens is a prime (not a zoom) the widest aperture available at this scale is f5.6. The f2.8 max aperture is not available throughout the focus/scale range.

Focal Distance Comparison

90mm f2.8 Prime
Macro Lens
ISO 200
f5.6
1/40 sec
Tripod Mounted
Lens at 1:1 focus
distance
0.3m (0.95ft)

Note that although the lens to object distance has only decreased by 0.15m (0.53ft/6.3in) the target area has decreased significantly and in order to maintain an acceptable depth of field the aperture has been reduced to f5.6.

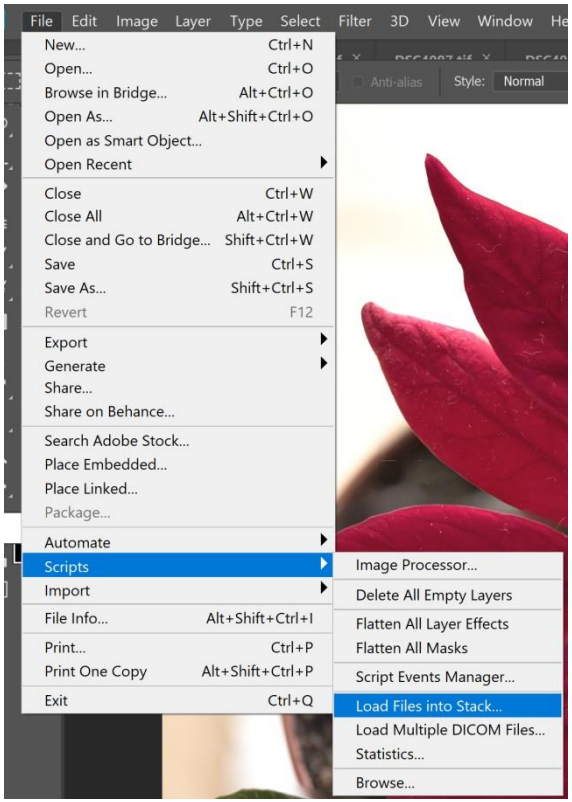
Focal Distance Comparison

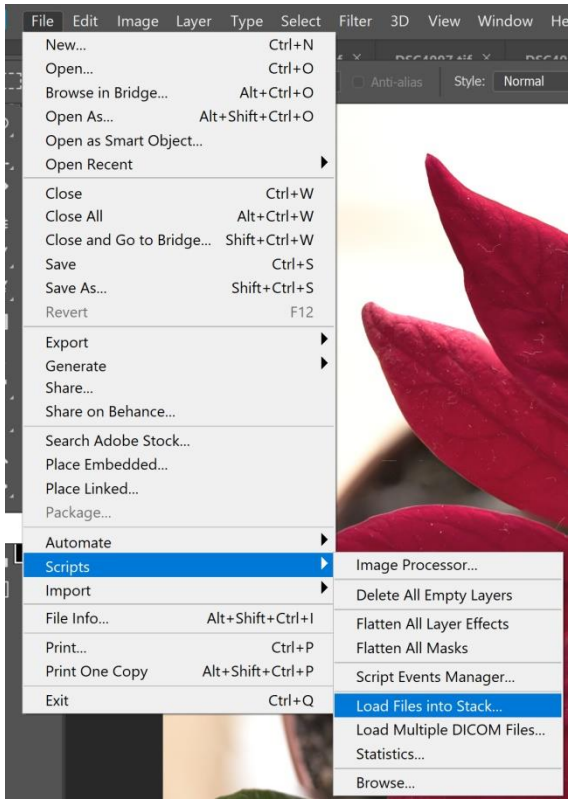
Study a crop of the target area of the previous image. Note the extremely narrow band that is actually sharp.

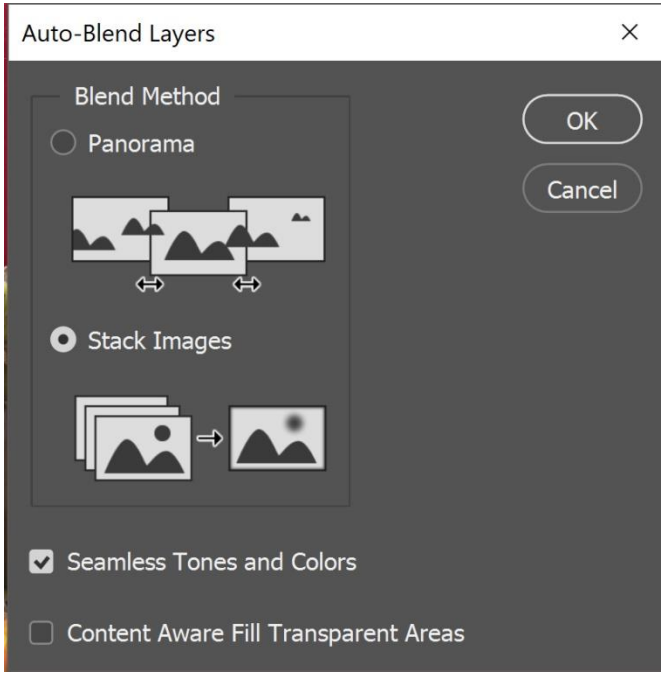
This is a classic example of why it is difficult to shoot macro hand-held.

Focus Stacking – The Process

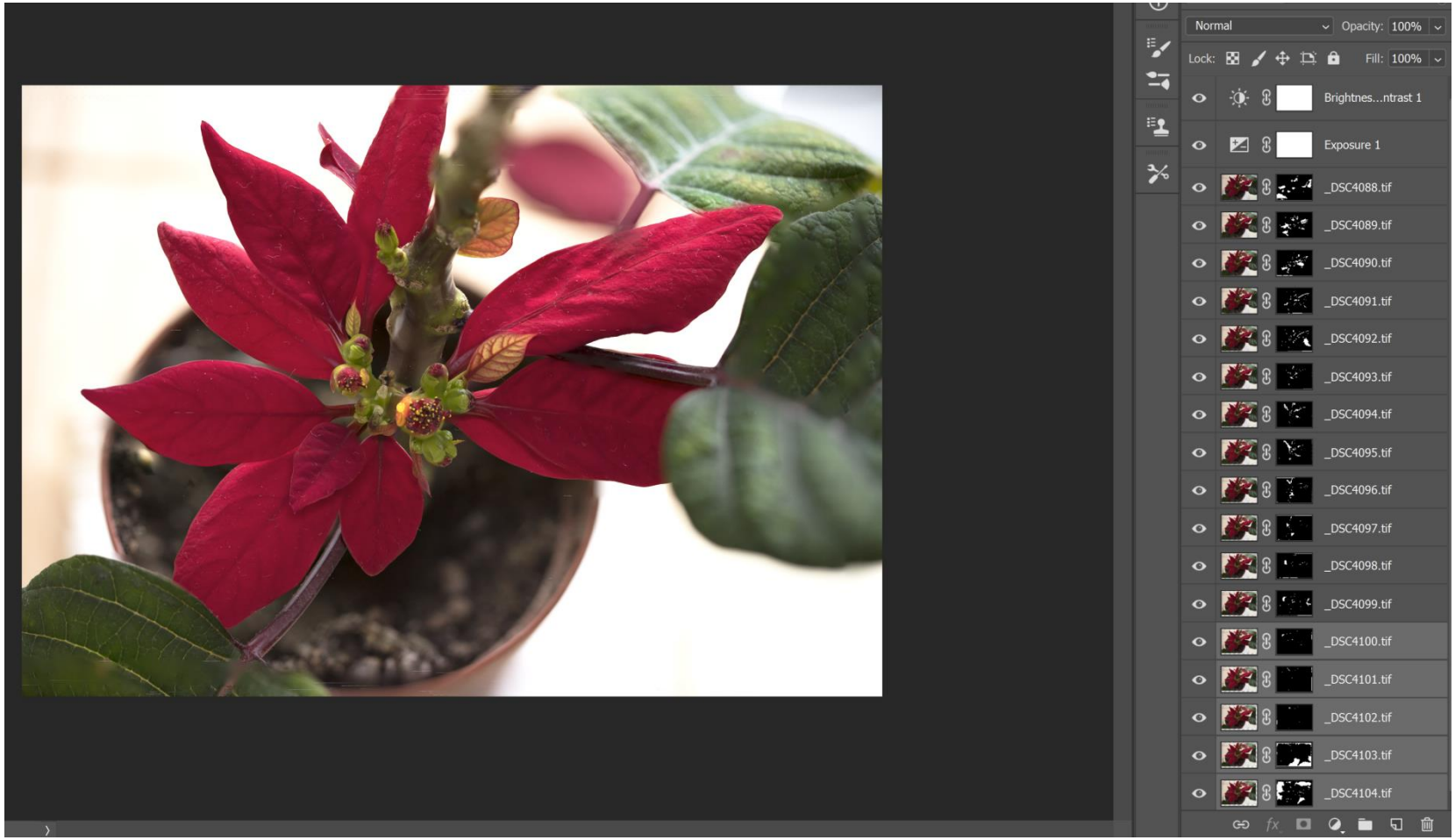
- Taking multiple images focused slightly different each time to build a complete image.







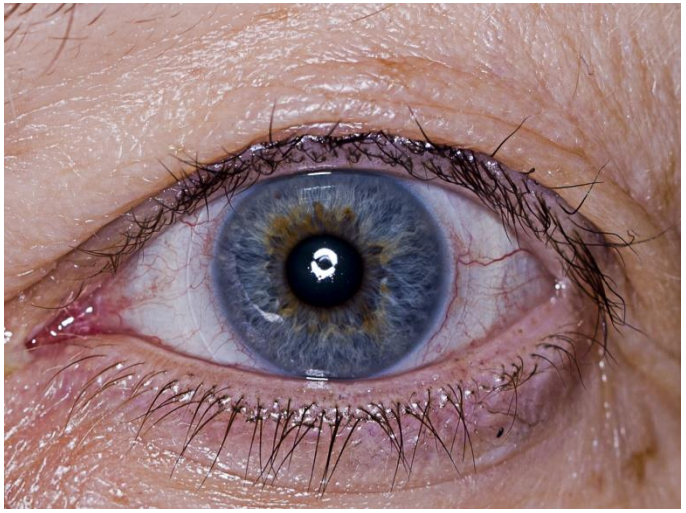
Focus Stacking



Focus Stacking Final Image

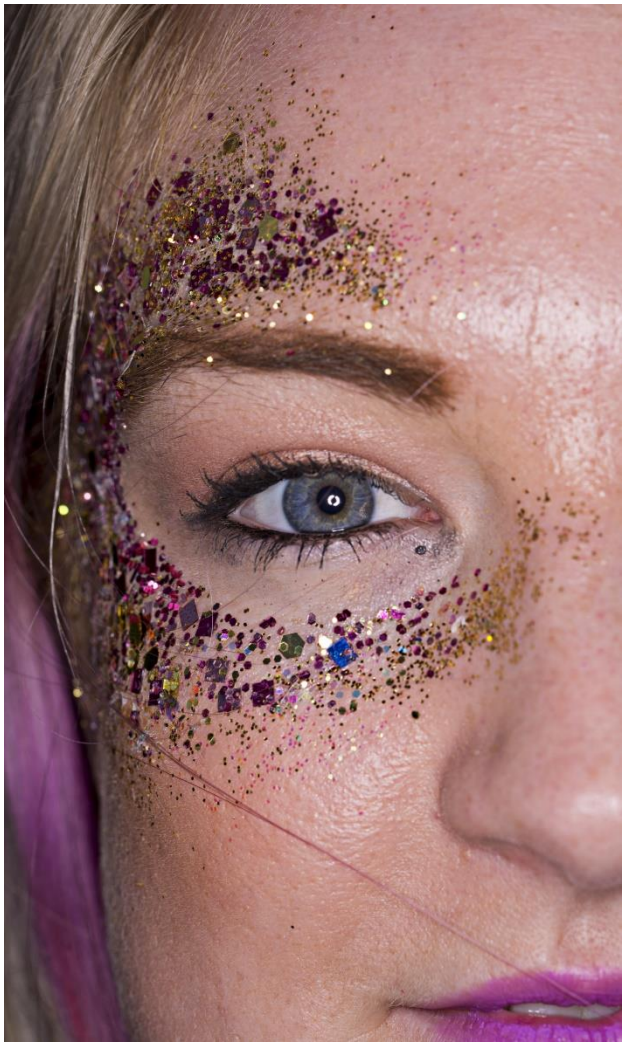
17 images Focus stacked to a single image

Macro Examples



Macro as a Portrait Lens

90mm Macro
1/80sec f9.0
ISO 125
Nissin Ring
Flash VR ON
Handheld



90mm Macro
1/80sec f9.0
ISO 125
Nissin Ring
Flash VR ON
Handheld

ANY QUESTIONS

I hope you found it interesting

THANK YOU FOR LISTENING