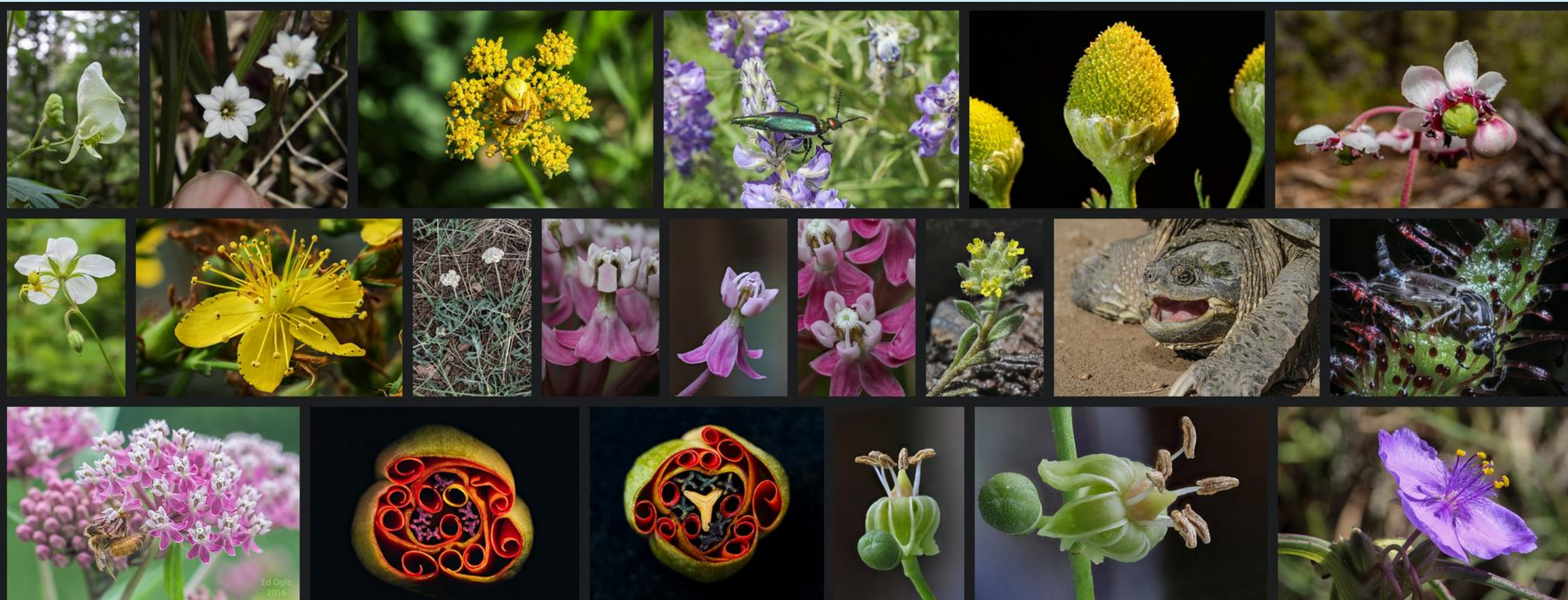


MACRO PHOTOGRAPHY TECHNIQUES AND IDEAS

Ed Ogle



What is Macro Photography

Macro photography is extreme close-up photography, usually of very small subjects and living organisms like insects, in which the size of the subject in the photograph is greater than life size.

The ratio of the subject size on the film plane (or sensor plane) to the actual subject size is known as the **reproduction ratio**. Likewise, a **macro lens** is classically a lens capable of reproduction ratios of at least 1:1, although it often refers to any lens with a large reproduction ratio, despite rarely exceeding 1:1

- Wikipedia

MY MACRO LENSES:

RF100mm F2.8 L MACRO IS USM

Expensive but this is the sharpest lens I have ever owned.

RF 35mm F1.8 Macro IS STM

Inexpensive and light weight lens. Great for hiking.

MP-E 65mm f/2.8 1-5x Macro

Very difficult to use fixed focus lens.

Learning Macro photography is hard.

Last week I got kicked out of a photography workshop for indecent exposure

CANON EXTENSION TUBES: 12MM & 25MM



RAYNOX DCR-250



RAYNOX DCR-250

Example Photos made using this device



FOCUS RAIL



Canon Extender EF 2x

The use of a 2x teleconverter is supported with the Canon MP-E 65mm Super macro and produces a magnification of 5X to 10X.

I have only tried this once.





1X



5X



1X With 2X Extender



5X With 2X Extender

Another Macro Example – Macro Set-up and Resulting Image

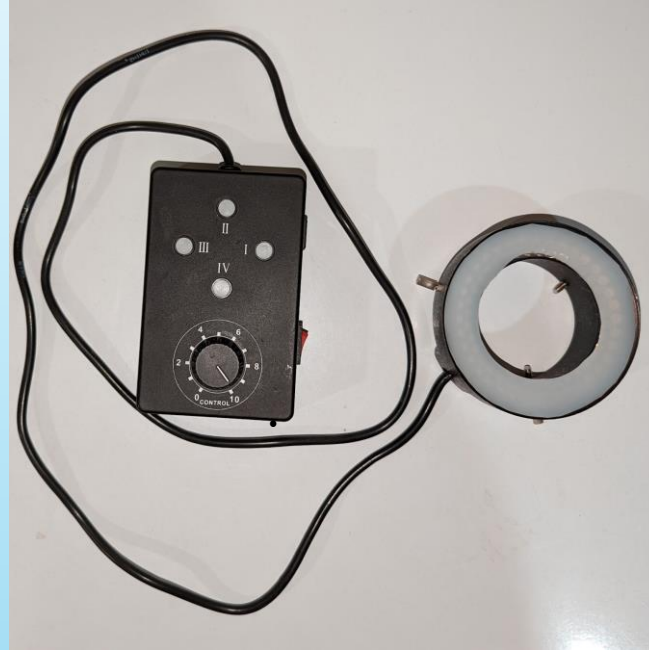


Canon R5
MP-E 65mm
4X
f/13
9 Image Focus Stack

Lighting - Artificial



Yongnuo Ring Flash



Microscope Illuminator



Photo Studio Light

I failed my course in Photography Lighting
Teacher said I wasn't bright enough.

Macro Photography Set-up with Ring Flash

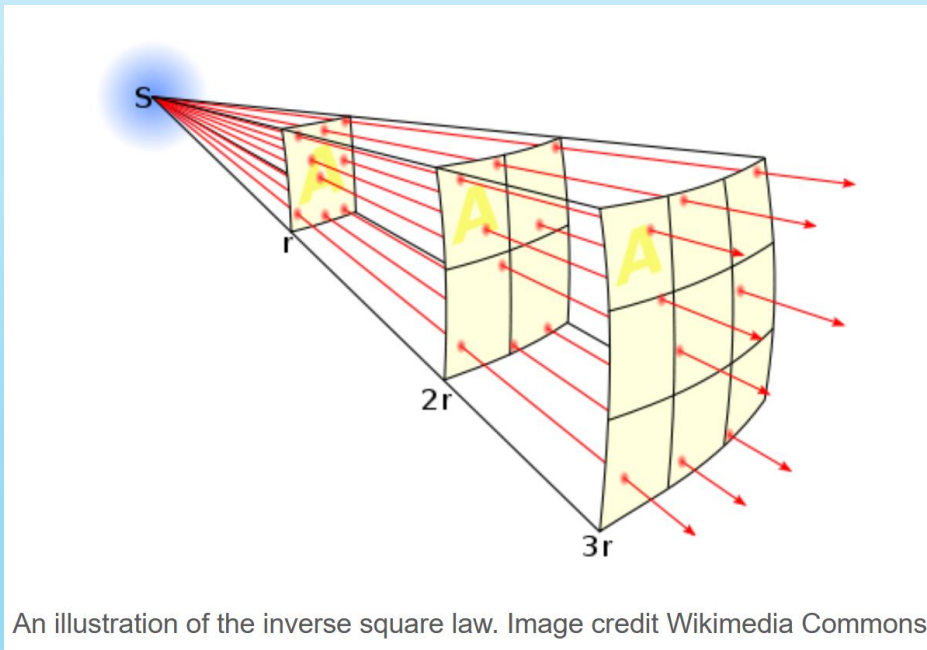


Macro Photography Set-up
With Microscope Ring Light



Lighting - Artificial

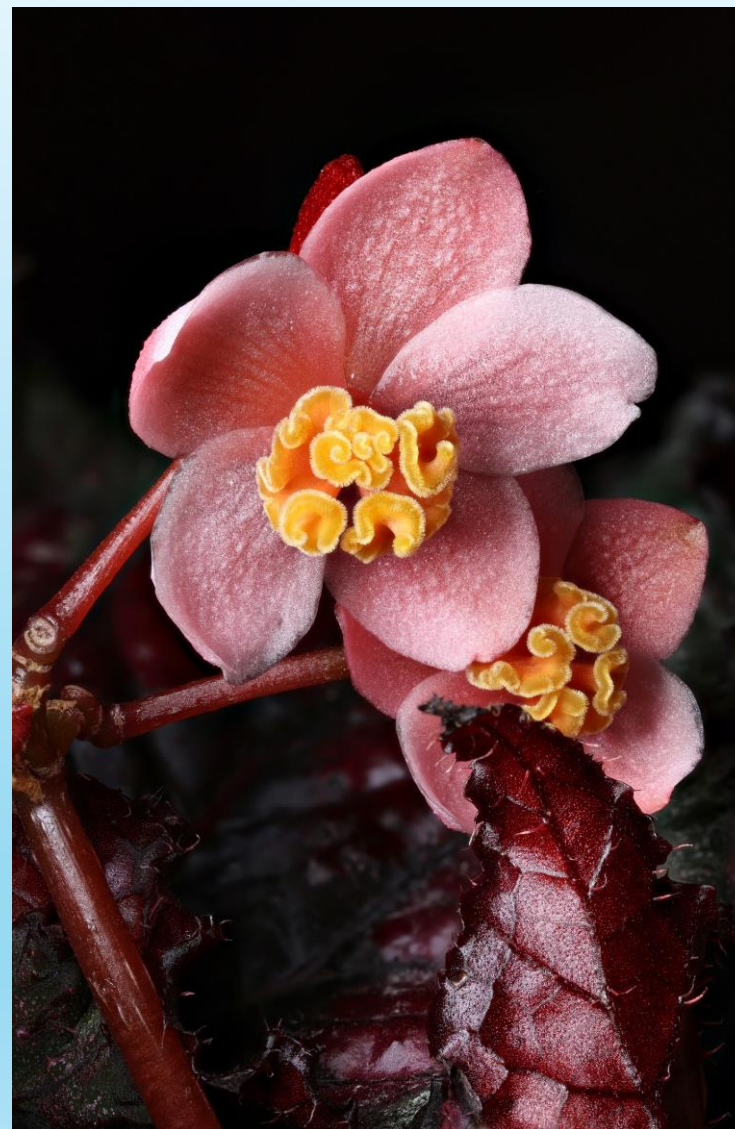
Neewer 100W 5600K LED Video Light
Daylight Balanced LED Continuous Lighting
CRI 97+, TLCI 97+
11000 Lux at 1 meter



An illustration of the inverse square law. Image credit Wikimedia Commons

Full Sunlight is approximately 25,000 Lux therefore this lamp is full sun at about 20 inches.

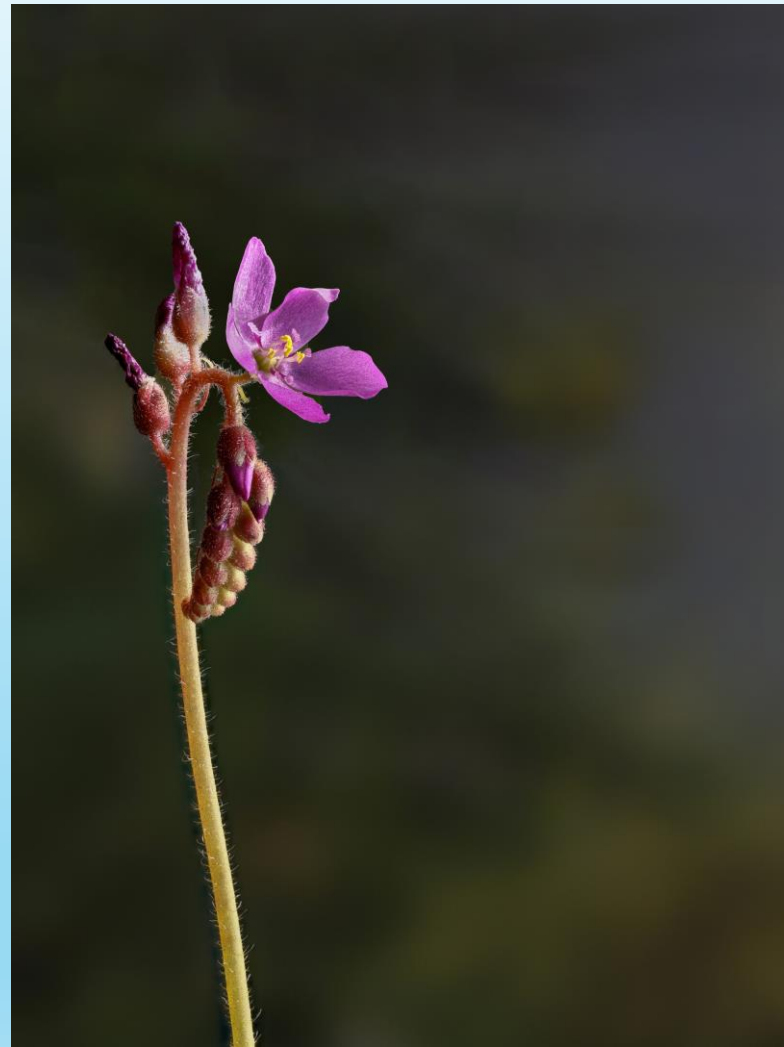
Lighting - Artificial



Lighting - Artificial



Lighting - Natural



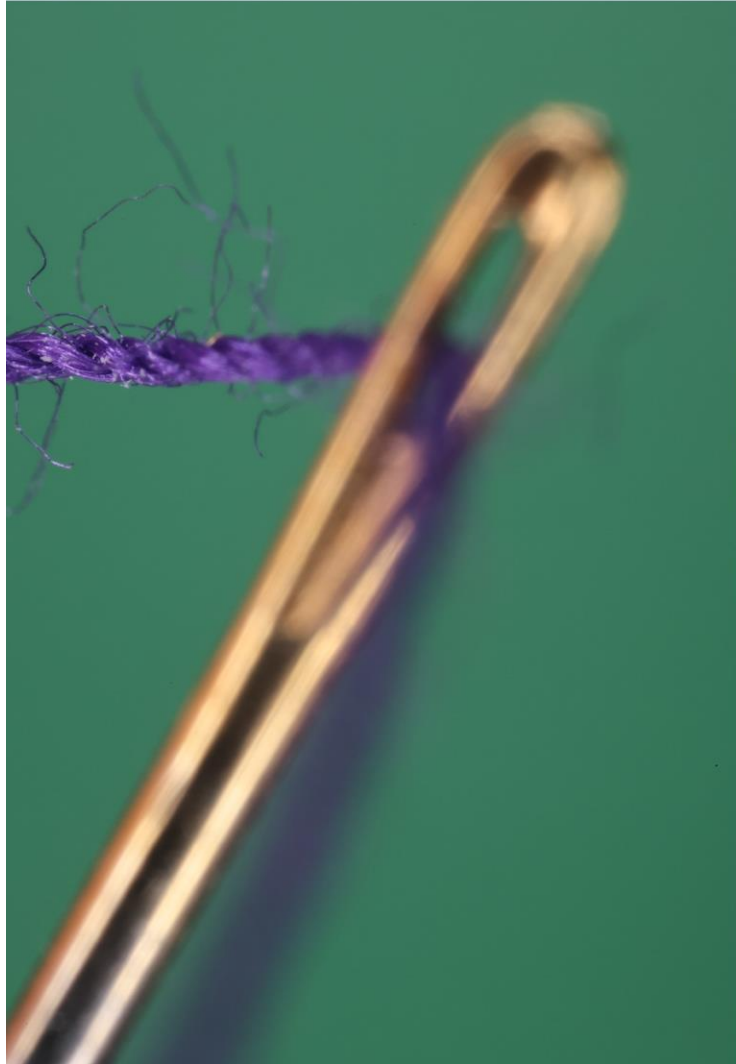
The Window Sill Method

What is Focus Stacking

Focus stacking (also known as **focal plane merging**, **z-stacking**, **focus blending**, **and now Focus Bracketing**) is a digital image processing technique which combines multiple images taken at different focus distances to give a resulting image with a greater depth of field (DOF) than any of the individual source images.

- Wikipedia

1st Image In Stack



17th Image In Stack



Final Stacked Image



APPLICATIONS OF FOCUS STACKING

Close-up Photography:

Reproduction Ratios of less than 1:1

Macro Photography:

Reproduction Ratios of 1:1 to 10:1

Photo micrography:

Reproduction Ratios of 10:1 or Greater

Any photography that requires a DOF that is greater than the optical system will allow including landscape photography.

FOCUS STACKING AND LANDSCAPE PHOTOGRAPHY

F/5 40MM

First Image

24th Image

Final Image



FOCUS STACKING AND LANDSCAPE PHOTOGRAPHY

F/5.6 200MM



FOCUS STACKING SOFTWARE

The stacking software that I have used:

Photoshop

Zerene Stacker

stacker [Zerene Stacker]



<https://zerenesystems.com/cms/stacker>

Zerene Stacker is designed for deep stacks. There is no intrinsic limit on stack depth. Many of our users routinely go over 100 images per stack; the biggest ones we know about are over 1000. **Zerene Stacker** can handle any modern camera we know of. Some of our users regularly process 200 megapixels per frame, from high-end Hasselblad cameras.

- Wikipedia

OTHER FOCUS STACKING SOFTWARE

Software / Application [\[edit source \]](#)

Focus stacking software				
Name ↕	Primary author ↕	Application type ↕	Platform ↕	License ↕
Adobe Photoshop ^[8] CS4, CS5, CS6	Adobe	Desktop	Windows, Mac OS X	Proprietary
Affinity Photo 'Focus Merge'	Serif	Desktop	Windows, Mac OS X	Proprietary
Aphelion with Multifocus extension	ADCIS	Desktop	Windows	Proprietary, 30-day trial
Amira / Avizo 'Image Stack Projection' ^[9]	Thermofisher	Desktop	Windows, Mac OS X, Linux	Proprietary
CamRanger	CamRanger	Desktop / Mobile	iOS, Android, Mac OS X, Windows	Proprietary
Chasys Draw IES	John Paul Chacha	Desktop	Windows	Proprietary
CombineZ	Alan Hadley	Desktop	Windows	GPL
Enfuse (combined with <code>align_image_stack</code> or similar)	Andrew Mihal and hugin development team	Desktop	Multiplatform	GPL
Focus Stacker	Alexander Boltnev, Olga Kacher	Desktop	Mac OS X	Proprietary
Focus Stacking Online ^[10]	Focus Stacking Online	Web application	All	Proprietary
Shutter Stream Product Photography Software	Iconasys	Desktop	Windows, Mac OS X	Proprietary
Helicon Focus	Danylo Kozub	Desktop	Windows, Mac OS X	Proprietary, 30-day trial
ImageJ with Extended Depth of Field Plugin	Alex Prudencio, Jesse Berent, Daniel Sage	Desktop	Unix, Linux, Windows, Mac OS 9 and Mac OS X	Public domain
MacroFusion ^[11]	Dariusz Duma	Desktop	Linux	GPL
Picolay	Heribert Cypionka	Desktop	Windows	Freeware
QuickPHOTO with Deep Focus extension	Promicra	Desktop	Windows	Proprietary, 30-day trial
Zerene Stacker	Rik Littlefield	Desktop	Windows, Mac OS X, Linux	Proprietary, 30-day trial

PROBLEMS AND WORK AROUNDS

Off Axis Problem: The camera isn't aligned correctly on the focus rail.

Halo Problem: The greater the DOF the worse this problem becomes.

Field of View: The field of view changes with each successive image in the stack.

Sensor Dirt and Spots: Dust on the camera sensor will become multiple spots.

Noise: Areas of the image that contain noise can appear sharper so digital noise can accumulate in focus stacked images.

Macro Photography Techniques that I haven't Tried (yet)

Why I gave up on macro photography.
Couldn't focus.

Venus Optics LAOWA 24mm f/14 Probe LAOWA





Macro Rail Package



Includes Power Supply and Motor Cable

Things I haven't Tried But am Interested In

Microscope Objective Photography



Things I haven't Tried But am Interested In

Microscope Objective Photography



Resources

Facebook Groups:



Macro Photography - Ideas and Techniques

Your group



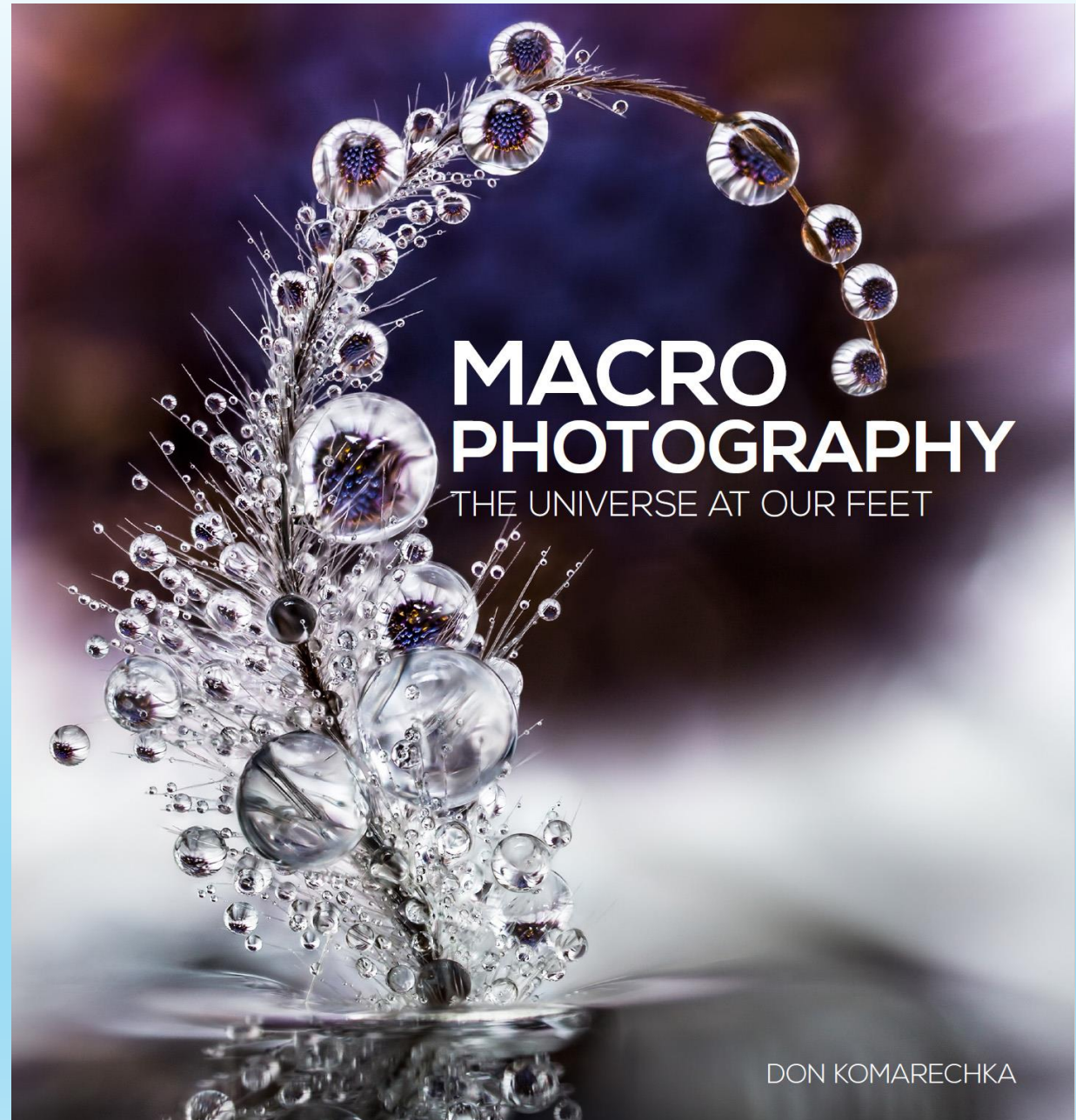
Macro Photography

Your group



Super Macro Photography

Your group



The End

Thanks!!!!

How do you end up with a photography business worth \$1 million?

Start out with \$2 million.