



Capture Workflow (Adobe Lightroom Creative Cloud)

Updated July, 2018

Filters

The Target-UV has been calibrated to give the best color rendering using the following filters:

1. Kodak Wratten 2e pale yellow filter
2. Peca 918
3. Internal camera sensor filtration
 - For UV-IR or modified cameras that have had this filtration removed, a BG-38, blue-green glass filter is recommended

About this Workflow

Please see the UV Innovations setup workflow for Lightroom for important instructions on RAW setup that are required before using this workflow. Found at: www.uvinnovations.com/resources.

Users must shoot in RAW mode to use this workflow. Screen shots and settings are based on a Nikon D800E tethered to a computer. Images were captured with Nikon Capture II on a Mac. Adobe Lightroom (version 5.6 on Mac OSX v. 10.9.4) was used for image processing. Separate curves and raw processing settings for other common programs will be provided, as needed. See www.uvinnovations.com.

Please email us at info@uvinnovations.com for clarification, questions, or comments on this workflow.

For questions about sales and availability contact Image Science Associates at 1-888-801-6626 or www.imagescienceassociates.com

Troubleshooting

Frequently asked questions and suggestions for troubleshooting are provided on our website www.uvinnovations.com. In addition to this resource, see *The AIC Guide to Digital Photography and Conservation Documentation*¹, for more detailed information on the use of UV-visible documentation, workflows, equipment, file management, and other general digital documentation instructions.

Summary of Workflow

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¹ Warda, Jeffrey (ed.), Franziska Frey, Dawn Heller, Dan Kushel, Timothy Vitale, Gawain Weaver. *The AIC Guide to Digital Photography and Conservation Documentation*, 2nd Edition. Washington, D.C.: American Institute for Conservation, 2011.

Low, Medium, High and Ultra Fluorescence—A Guide to Intensity

The Target-UV is designed with levels to match the relative intensity of the fluorescence emitted by materials. Due to the emissive nature of UV-Visible fluorescence, users must choose the intensity level for each set of images.



Target UV viewed with UV radiation (peak emission 365nm)

*If you are unsure which Target level to use for image capture, compare the relative fluorescence of your object in UV to each level to help you choose. The correct Target level should fluoresce at a similar brightness to the object being documented. If you are still unsure, try shooting some images and checking your exposures. If you choose an inappropriate intensity level, your images will be over or under exposed. It may take some practice to become familiar with the intensities. See *Target-UV: Troubleshooting* for more tips.*

Below is a very general guide to fluorescence levels. This should be a starting point to get an idea of the fluorescence level, but actual objects can vary greatly due to thickness of application and a variety of other factors.

Low UV-visible fluorescent objects are most naturally fluorescent materials

Selected examples

- Most pigments used in watercolor and oil paints
- Thin adhesive films and varnish layers
- Mold and tidelines
- Bodily fluids
- Gemstones

Medium UV-visible fluorescent objects are most naturally fluorescent materials. This level is similar to “Low”, but might be used to illustrate a lower intensity.

Selected examples

- Paper sizing
- Currency
- Mold and tidelines
- Bodily fluids

High UV-visible fluorescent objects are thicker applications of naturally fluorescent materials, as well as early or degraded fluorescent pigments/dyes

Selected examples

- Thick adhesive and pigment layers
- Early optically brightened (OBA) photographic papers (circa 1957-1960s)
- Early 20th century stamps
- Some feathers
- Dyes added to credit cards, American driver’s licenses, passports
- Fluorescent minerals
- Uranium glass
- Ivory, teeth and bone

Ultra UV-visible fluorescent objects are materials that are manufactured to be fluorescent

Selected examples

- Optically brightened photographic and commercial paper post circa 1970
- Fluorescent pigments and dyes

Step 1: Set up

Ensure that:

- Required filters are in place (typically Wratten 2e and PECA 918)
- Your documentation area is set up for UV/visible documentation

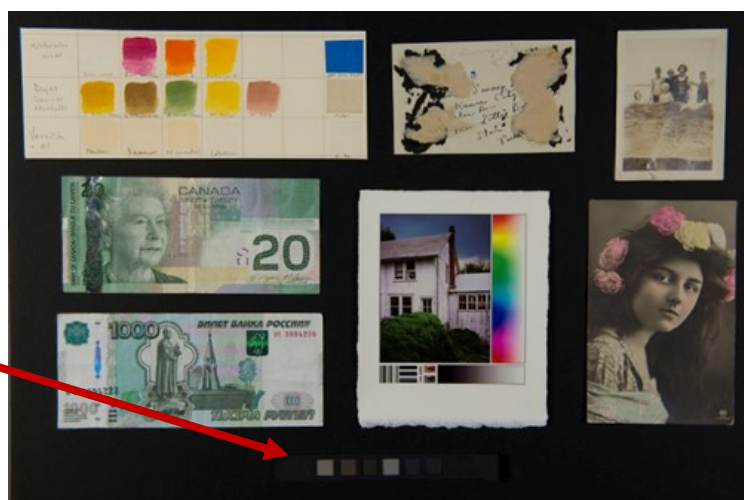
See “Setup Workflow Lightroom” for more information on recommended setup procedures

Step 2: Image Composition

Arrange your object[s] in your documentation space so they are centered and will be evenly illuminated by the UV source.

- a. Choose which intensity to use for your object (low/medium or high/ultra) based on their relative intensities. You may want to turn on the UV source (and turn off the overhead lights) to decide. See page 2 for a rough guide for choosing intensities.

- b. Place Target-UV. The reference card should be placed in the center of the field of view below the artwork being documented. This ensures that it is evenly illuminated by lights from both sides and provides an accurate representation of the artwork. (see image).



- c. Focus your image. If desired, use camera live view with overhead light on, but limit the use of live view, as it may unnecessarily heat up your camera's sensor.
- d. Fill the frame as much possible.
- e. Use camera auto-focus, if desired, but switch the focus to “Manual” to lock the focus before shutting out the lights for image capture.
- f. Turn on UV source and turn off overhead or working lights. Make any final adjustments to the angle of the UV source to reduce shadows and ensure even illumination.
- g. Cover the object with black paper or foam-core, or cover the UV source. Let the UV lamps warm up for at least 5 minutes.
- h. Measure the distance and angle of the lights and record for a repeatable workflow. Take a snapshot of your UV documentation set up in normal light if desired to help re-produce the set-up in the future.

Step 3: Capture Settings

While you are waiting for the lights to warm up, adjust your camera capture settings to download, name and store the files as required. Ensure that the white balance is set for the UV-Grey card.

Example below is for Nikon Capture Control:

- a. Recommended Camera capture settings
 - Download options [adjust and specify where you wish to save files]
 - File naming [specify file naming as needed]
 - Exposure
 - **Use Manual exposure**, as desired. Target-UV exposures typically work best with Manual exposure.
 - **Choose f-stop**: a setting in the middle of your lenses range is recommended for maximum sharpness ($f/11$ is a good starting point)
 - Adjust exposure compensation, f-stop or shutter speed as desired during your session for proper exposure.
 - **ISO = 200**
 - **White Balance = as set from UV-Grey card** (see “Setup Workflow Lightroom” document for instructions on setting and saving white balance)
 - “Storage” Image Quality [RAW] [lossless compressed] [14-bit]
 - “Image processing”: Colorspace [ProPhoto, if possible, if not use Adobe RGB]

Turn off overhead lights and uncover UV light source or artwork. Note: allow for warm up times.

Step 4: Image Capture

Take picture

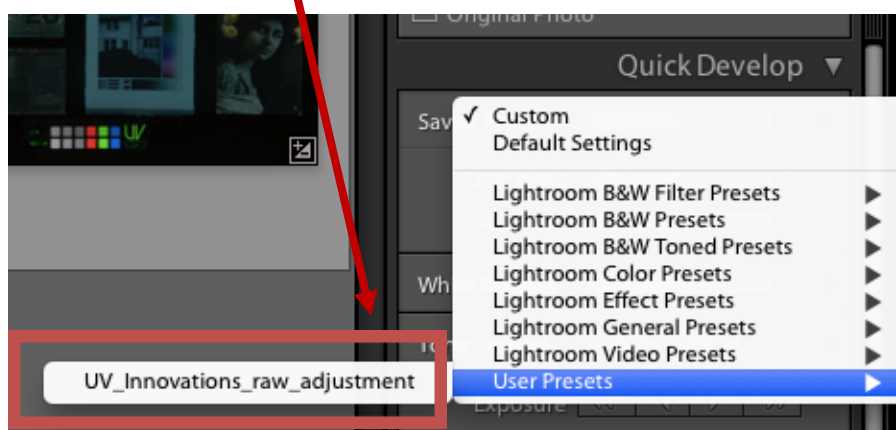
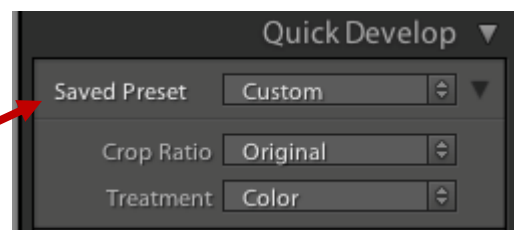
- a. Make sure room lights are off and no visible light can leak into your documentation area.
- b. Set exposure manually or using aperture priority. Exposures will vary greatly, so you may have to guess. Typical exposure times at Messier studio range from 5 to 20 seconds at $f/11$.
- c. Position the mouse over “shoot” and then cover or shut off the monitor (black Fome-cor can be very handy here). Make sure to keep mouse in place so you can click while monitor is off.
- d. Click the mouse to take the picture.
- e. Remove the monitor cover/turn on monitor. Turn on room lights, or working lights, as desired. For best viewing conditions for the images on your monitor, keep overhead lights off and limit the use of a working light. Dim monitor, if needed.
- f. Cover the object if necessary, or cover UV lamps.

Step 5: Load RAW settings and Evaluate Images

Open the image folder in Lightroom and go to the “Library” screen.

Load pre-set UV innovations raw settings as follows:

- From the “Library” screen, click the “Quick Develop” tab on the right.
- In the “Saved Preset” dropdown menu, select “User Presets” and then “uv_innovations_recommended_raw_adjustment” saved previously.*

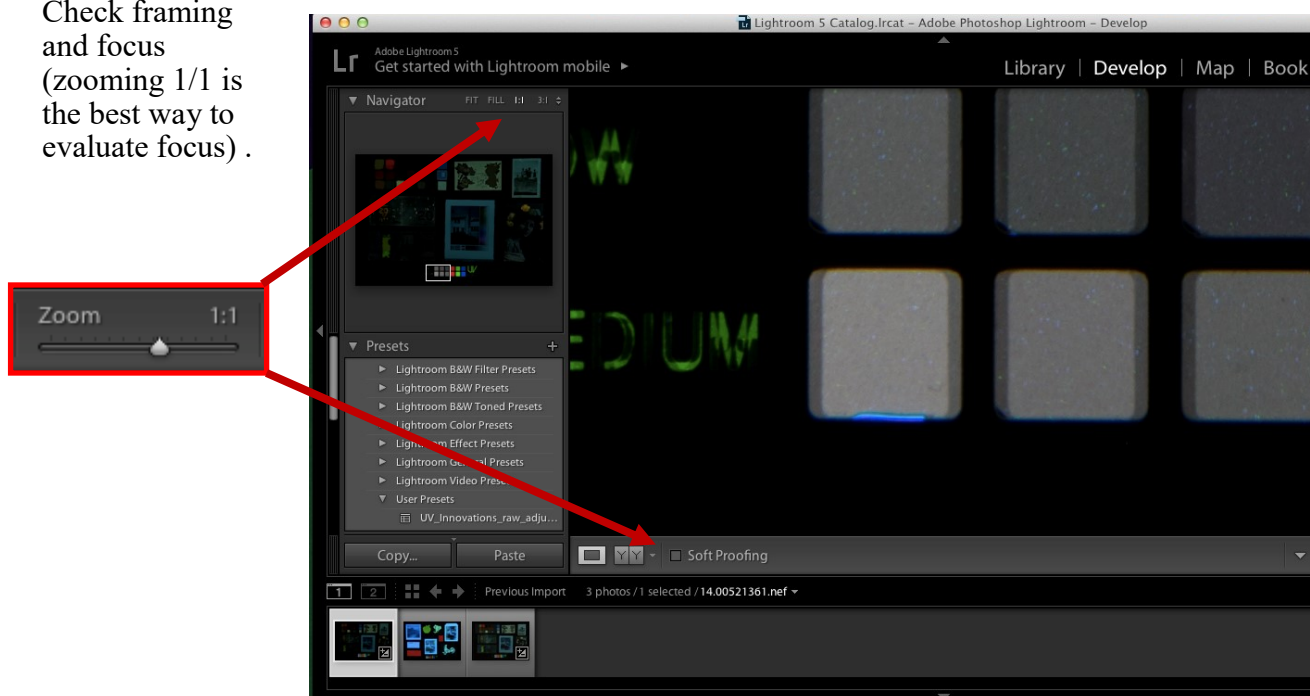


Note this can be done to multiple images at once by selecting all applicable images before applying preset.

* see “Setup Workflow Lightroom” document for instructions on setting and saving this pre-set.

Go to the “Develop” screen to work on an individual image.

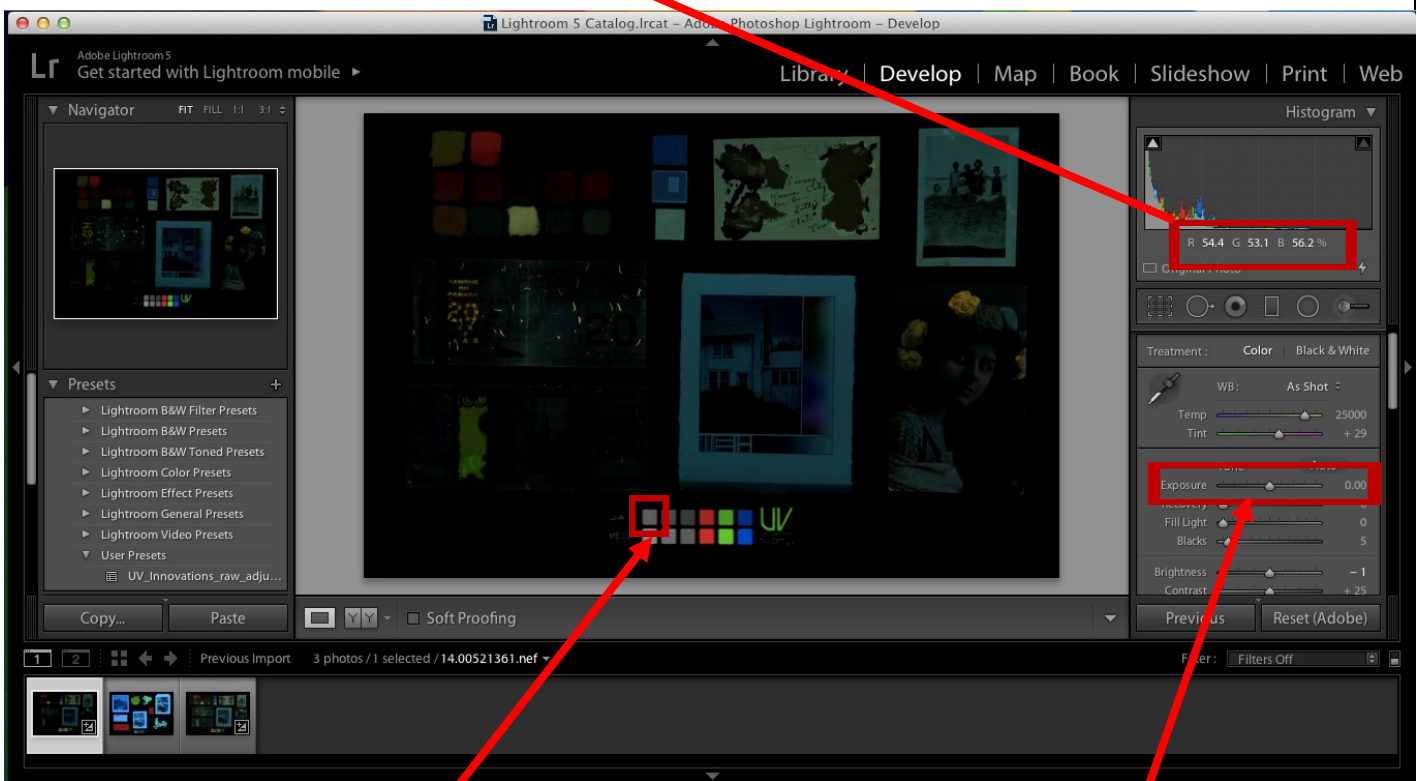
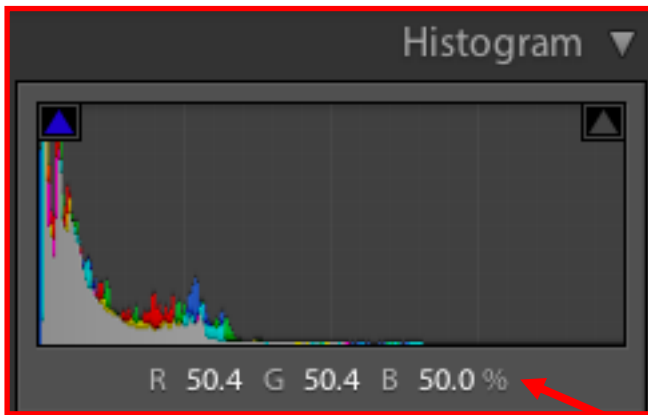
Check framing and focus (zooming 1:1 is the best way to evaluate focus).



Check exposure

- Using the pointer, hover over the grey patch all the way to the left of the Target-UV (the brightest grey patch on the level you have chosen). This will read the RGB values (in real time) and add them to the histogram window (top right below the histogram).
- If readings are erratic due to uneven pigment distribution, it may help to move the pointer around a bit. Zoom in, if needed.
- Adjust exposure slider until the RGB values equal **50% RGB +/- 3 units**.

***Re-take the image if exposure requires more than 1/3 stop exposure adjustment.

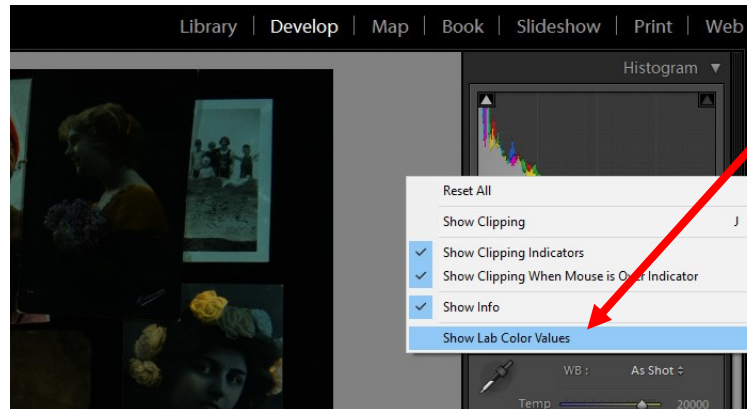


Hover over applicable grey patch

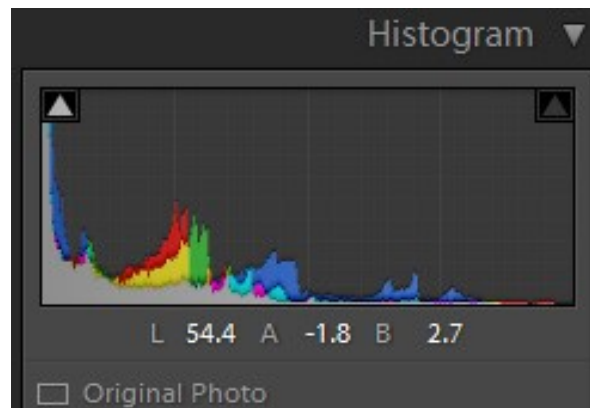
Adjust exposure slider until values = 50% RGB (retake if more than 1/3 stop)

Using L*a*b* values

- To adjust the exposure based on L*a*b* values instead of RGB, change your settings by right clicking (Windows) or control-click (Mac) on the histogram and choose “Show Lab Color Values”



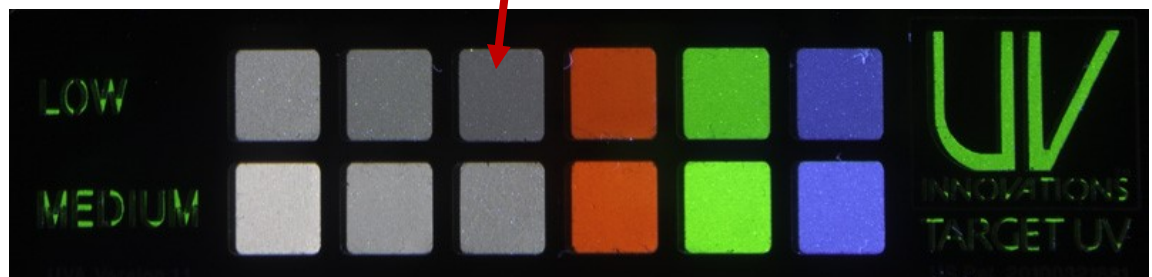
- Once the values have changed to L*a*b* values, adjust exposure to and L value of **54 +/- 3**.



- Alternate exposure options


For items with very low fluorescence, alternate exposure values may give better detail rendering. Use the following settings for a “low-low” level.

- Use the darkest gray patch on the “low” level of the Target.



- Adjust exposure until RGB values on this patch equal **128 (50% RGB) +/- 3**.
- If necessary, cover or crop out the “medium” level on the Target to prevent highlight clipping and/or bleeding.

- Note adjustments to standard protocol in metadata and image captions.

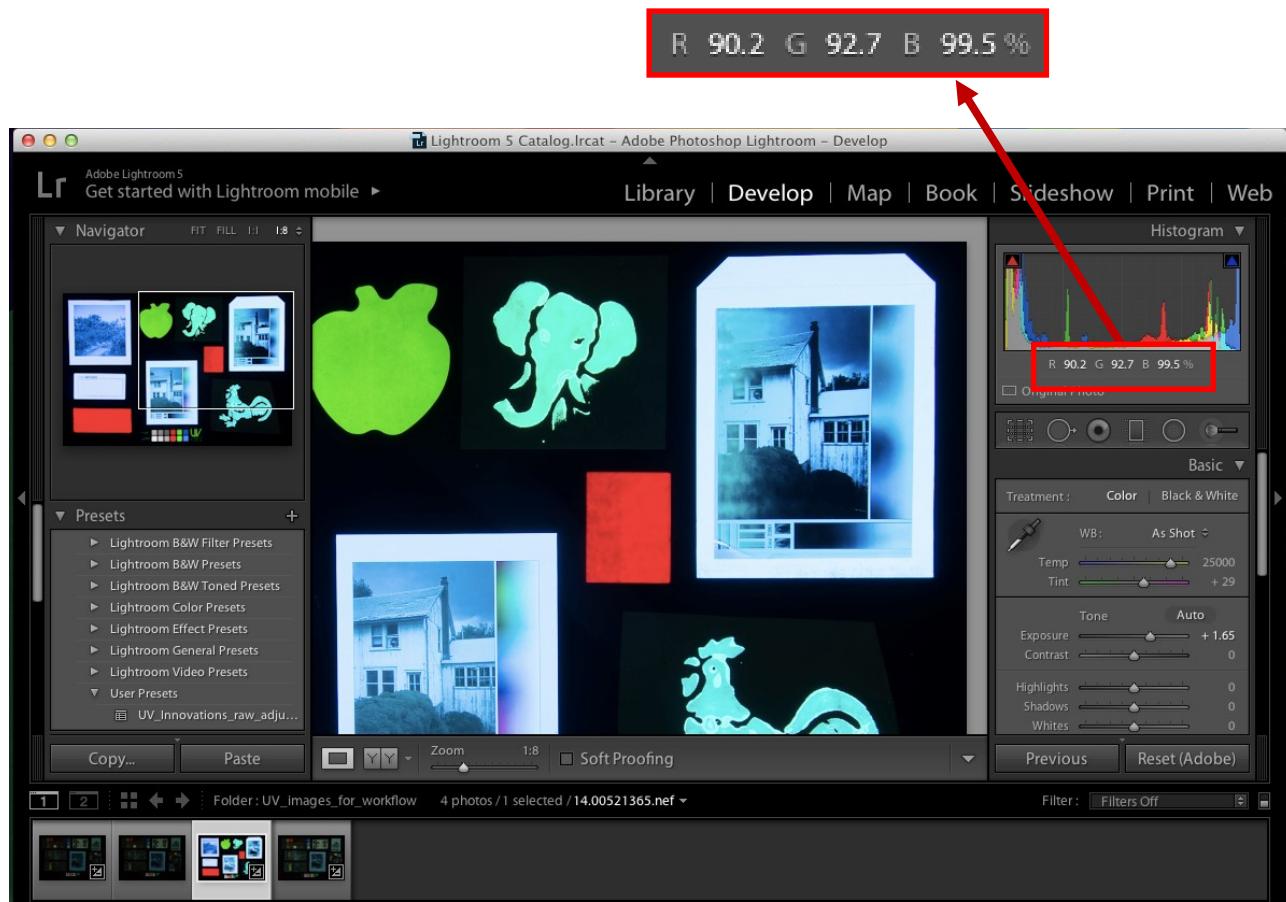
- It is best to use the stored white balance captured in the “setup workflow” using the UV-Gray card. However, you can adjust the white balance in the RAW image, if needed.
- Adjust white balance of the RAW image using the white balance tool  found in the “Basic” tab on the right of your screen. Click on one of the three grey patches in the Target-UV.

White Balance Tool

Use care with this tool as small variations and large particle size in the Target-UV may make it difficult to white balance off the grey patches. For example, zoom in to ensure that you are not measuring or white balancing on a spot with a large particle of green pigment.



- Hover over different portions of the image to ensure that no portions of the image hit a max RGB value (100%). Look for the brightest areas of the image, particularly any optically brightened materials. Re-take image with a different intensity Target-UV if any portion of the image approaches a max value of 100%.



Step 6: File Management & Metadata

Record all necessary data on metadata in the image file using the “Metadata” tab in the “Library” screen. See Adobe Lightroom help, or *The AIC Guide to Digital Photography and Conservation Documentation*¹ for information on Metadata. Recommended metadata info includes:

- a. Camera and exposure data (usually automatically added to metadata)

Camera	Color temperature + tint
Lens	Focal length
F-stop	Date Created
Shutter speed	ISO
Exposure compensation	Size
File name	Pixel dimensions
File type	Bit depth
	Color mode

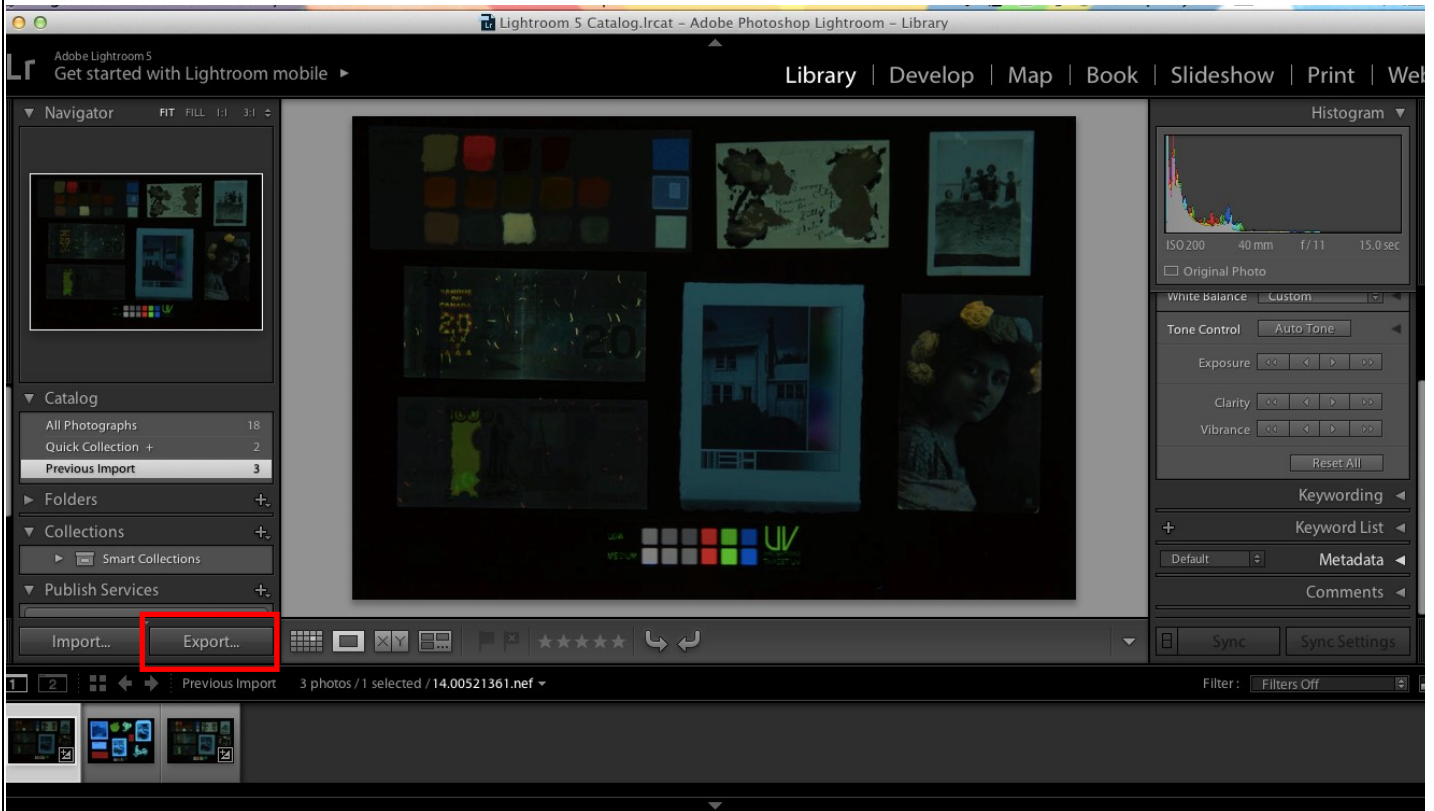
- b. Recommended additional metadata to add to IPTC core metadata [creator, description field, etc.], or other metadata system.

Your name
Filters used
Target-UV level used
Lighting used (model number and peak emission)
Distance from lens to subject (height of copy stand)
Distance from subject to radiation source
RGB reading of lightest grey patch from Target-UV
RAW adjustments
(Other notes, keywords, as needed)

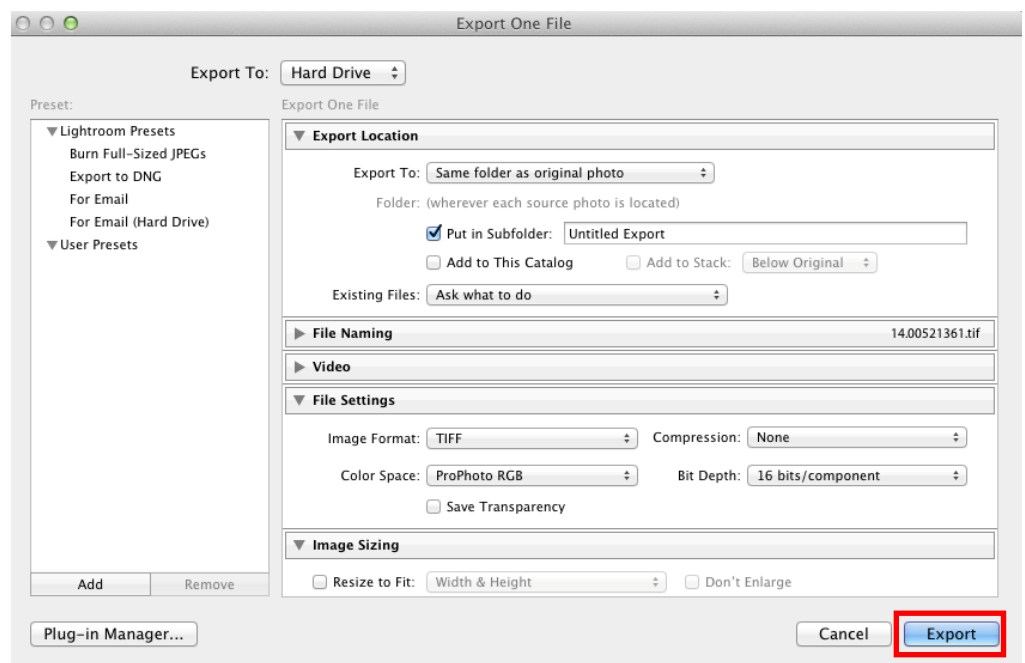
The screenshot shows the Adobe Lightroom Metadata panel with the 'IPTC' tab selected. The panel is divided into two main sections: 'Contact' and 'Content'. The 'Contact' section includes fields for Creator, Job Title, Address, City, State / Province, Postal Code, Country, Phone, E-Mail, and Website. The 'Content' section includes fields for Headline, Description, IPTC Subject Code, Description Writer, Category, and Other Categories. The 'Preset' dropdown is set to 'None'. The 'File Name' is '14.00521361.nef' and the 'Metadata Status' is 'Has been changed'.

¹ Warda, Jeffrey (ed.), Franziska Frey, Dawn Heller, Dan Kushel, Timothy Vitale, Gawain Weaver. *The AIC Guide to Digital Photography and Conservation Documentation*, 2nd Edition. Washington, D.C.: American Institute for Conservation, 2011.

Save the image as desired using the “Export” button in the bottom left corner of the Photoshop “Library” screen.



- Chose export location, file naming and file settings, as desired. DNG, and TIFF formats are recommended for archival storage of files.
- Ensure that color space is set to “ProPhoto RGB” if saving as a TIFF. Note that this color space works best with a 16 bit/channel depth. If creating Jpegs for printing or file sharing, use “Adobe RGB”.
- Click “Export” to save your images.



- Repeat workflow as needed with additional images.