

UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

**Purchase of Fluorescence Gel Documentation
for Chemistry Laboratory Courses**

Wu Xu and Hui Yan

Name of Submitter
(Faculty or Staff Only)

Department of Chemistry

Organization

Title: Purchase of Fluorescence Gel Documentation for Chemistry Laboratory Courses

Date: 07/02/2016

Names (Contact persons): Wu Xu

Address: Department of Chemistry, P.O. Box 44270, University of Louisiana at Lafayette, 70504

Phone Number: 337-482-5684 (Dr. Xu)

Email: wxx6941@louisiana.edu (Dr. Xu)

Department/College/Organization: Department of Chemistry/College of Sciences

ABSTRACT:

Biochemistry is foundational and interdisciplinary field in the interface between biology and chemistry for >200 students in the colleges of science, engineering and education. The use and handling of fluorescence gel documentation is an essential part of biochemistry education, serving as an introduction to proper computer-driven instrument handling. Dr. Xu has published >thirty papers and almost every publication contains the results from this instrument. Many undergraduates are the co-authors of those publications. In addition, biochemistry was added into biology and chemistry curriculum in 2015. The ten-year old fluorescence gel documentation had a problem on April 8th, 2016. Dr. Xu has contacted the vendor (Bio-Rad) and our IT support. After more than one-month trouble shooting, Kate Clark, a technical support from Bio-Rad, told us that they cannot repair it. A gel documentation system is an essential instrument, and without it, Dr. Xu is not able to teach biochemistry courses and other related courses. The main purpose of this proposal is to request purchase of a new durable, and high quality gel documentation system to replace the current one. We expect that the new equipment will have a positive impact on hundreds of students each year. Our students will obtain more accurate data, and be more efficient in the lab. In addition to aiding students, a new instrument can also be used in many other chemistry labs (general, inorganic, organic, analytical, physical chemistry, and undergraduate research). Chemistry labs need a working gel documentation, and this situation compels us to submit this proposal for university support.

Purchase of Fluorescence Gel Documentation for Chemistry Laboratory Courses

A. Purpose of grant and impact to student body as a whole

Because there is no graduate program in the Department of Chemistry, the department's mission is focused on undergraduate teaching and training. Currently, the Department of Chemistry offers ten laboratory courses: CHEM 112 (General Chemistry for Education Majors), CHEM 115 (General Chemistry), CHEM 222 (Analytical), CHEM 252 and 452 (Inorganic), CHEM 233 (Organic I), CHEM 234 (Organic II), CHEM 311 (Physical I), CHEM 312 (Physical II), CHEM 319 (Biochemistry) and CHEM 362/462 (Undergraduate Research I/II) for the students of the Colleges of Science, Engineering, and Education, as well as courses designed for those interested in non-technical fields.

CHEM 115 (General Chemistry Lab) is designed to reinforce concepts learned in lectures of general chemistry (CHEM 107 and CHEM 108) and provides an introduction into basic laboratory techniques, the experimental methods, and the presentation of scientific data, as well as direct experiences with chemical principles and the properties and reactions of substances and molecules. This lab is a required course for undergraduates majoring in biology, chemistry, physics, chemical engineering, civil engineering, petroleum engineering, and kinesiology. The department typically offers eight sections of CHEM 115 in fall semesters and nine sections in spring semesters. There are also four to five summer sections of CHEM 115, although the number of sections is somewhat variable. Each section has ~25 students (American Chemical Society (ACS) limits number of students in any chemistry lab to 25), and every sections is typically full, and has a substantial wait list. It is estimated that approximately 500 students take this lab every year.

Table 1. List of undergraduate majors which require CHEM 115 for graduation

	CHEM 115 General Chemistry
Biology	X
Microbiology	X
Biodiversity	X
Chemistry	X
Chem Eng	X
Civil Eng	X
Petroleum Eng	X
Physics	X
Kinesiology	X

Chemistry is one of traditional and fundamental fields. Its applications are to address the challenges facing the world by combating diseases, providing clean water and safe food, developing new sources of energy, developing new materials, and confronting climate changes through interdisciplinary nature of chemistry. To obtain skills in solving world challenges, it requires an appropriate suite of modern chemical instrumentation and specialized laboratory apparatus to analyze chemical properties of small and large molecules to support undergraduate instructional and research missions. Gel electrophoresis and followed by fluorescence characterization, widely used in research and diagnosis, is a fundamental technology in analytical, biological, general, inorganic, organic, and physical chemistry. The American Chemistry Society (ACS) guidelines indicate that students should have hands-on experience with fluorescence detection. The complexity of molecule characterization techniques including fluorescence detection often makes it difficult for students to connect the technique to the basic chemical principles.

Furthermore, molecule techniques are often taught using a list of instructions without a direct tie to the chemical concepts that are necessary for a comprehensive understanding. For these reasons, students often struggle to fully analyze data completely, draw appropriate conclusions, or troubleshoot problems related to the technique. Previous studies have shown that the combination of “hands-on and minds-on components” of a lab help enhance student learning. The four fluorescence gel documentation labs designed in CHEM 319, one lab being developed in CHEM 115 and one related lab designed in CHEM 222 promote the application of critical thinking skills to real-world scientific problems and the development of scientific reasoning by allowing students to investigate a problem and draw conclusions from their results. These labs aim to increase the quality of students by integrating hands-on experiences from labs and minds-on components from lectures.

Our department has only one fluorescence gel documentation (Bio-Rad Laboratories). Dr. Xu purchased this instrument in 2006 for biochemistry lecture and lab courses when he joined UL Lafayette as an assis-

tant professor. It is ten years old. It had a problem to acquire fluorescence gel images on April 8th, 2016 (Figure 1). Dr. Xu contacted Bio-Rad technical support by phone and by email on April 8th, 2016, and tried to solve the problems. Kate Clark, PhD, Bio-Rad Technical Support, Bio-Rad Laboratories (email: support@bio-rad.com; and phone: 800-424-6723). Kate told us that the gel documentation XR firewire system did not talking to the computer. She suggested that the first things to do are these: (1) Check green LED on camera is working; (2) Turn everything off, and unplug the camera. Turn on the camera first, then hood and computer. Kate also told us that the specifications for the parts we may need are (1) Firewire cable - IEEE 1394 6-Pin/6-Pin 400 Mbps FireWire Cable (Bio-Rad cat# 1708177), (2) Firewire PCI card - 1394 6-Pin, 400 Mbps FireWire, and (3) Gel Doc XR firewire Camera power supply - Bio-Rad 10000579. If the problem is not due those parts, Bio-Rad cannot repair it (Please see the supporting evidence). We purchased those parts and Justin Campbell from our IT support spent more than two hours on April 28th, 2016 to install those parts and he also reinstalled software (Please see the support letter from Justin Campbell). The instrument worked for one or two days, and did not work after that. Dr. Xu contacted Bio-Rad support again. From April 8th to May 12th, 2016, Dr. Xu and Kate had 49 emails and several phone calls. We have tried everything we can do. However, we still cannot repair it. Dr. Xu has spent a total of an approximate week on repairing it since April 8th, 2016. It reaches the point that Dr. Xu needs to write this STEP to purchase a new one. A new fluorescence gel documentation would allow faculty to teach students to meet ACS standards.

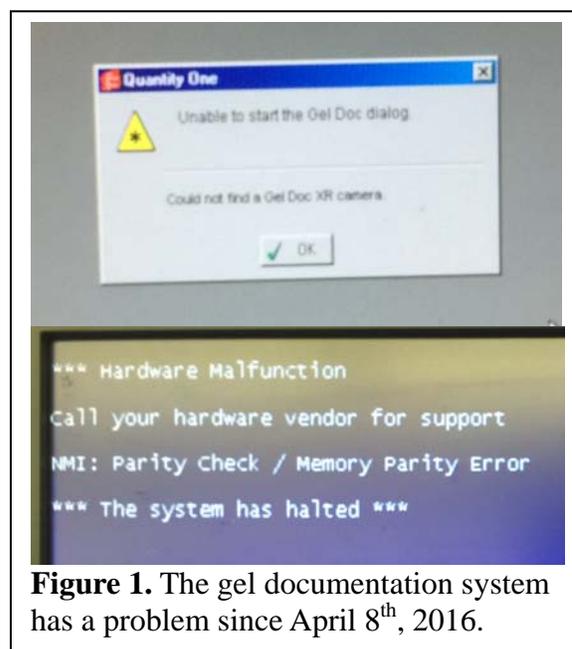


Figure 1. The gel documentation system has a problem since April 8th, 2016.

We purchased those parts and Justin Campbell from our IT support spent more than two hours on April 28th, 2016 to install those parts and he also reinstalled software (Please see the support letter from Justin Campbell). The instrument worked for one or two days, and did not work after that. Dr. Xu contacted Bio-Rad support again. From April 8th to May 12th, 2016, Dr. Xu and Kate had 49 emails and several phone calls. We have tried everything we can do. However, we still cannot repair it. Dr. Xu has spent a total of an approximate week on repairing it since April 8th, 2016. It reaches the point that Dr. Xu needs to write this STEP to purchase a new one. A new fluorescence gel documentation would allow faculty to teach students to meet ACS standards.

The main purpose of the proposal is to purchase a new fluorescence gel documentation with its accessories for CHEM 317, CHEM 417, CHEM 319 lab, CHEM 115 lab, CHEM 362/462 lab and CHEM 222 lab. Dr. Xu along with other faculty members who teach those lecture and lab courses. This situation requires us to initiate this STEP proposal, seeking support from our university. Students will benefit in the following ways:

(i) Gel electrophoresis and fluorescence detection are discussed in biochemistry lecture. A new fluorescence gel documentation system will be used in chemistry lab courses, allowing upper-division students to be benefited. For example, CHEM 319, Biochemistry Lab, an interdisciplinary field between biology and chemistry, designed by Dr. Xu, is to introduce students to the basic biochemical techniques commonly used in a research laboratory. Students have the opportunity to acquire the experience working with four major classes of biological macromolecules: carbohydrates, proteins, lipids and nucleic acids. Techniques include gel electrophoresis,

spectrophotometry, centrifugation, isolation and purification of carbohydrates, proteins and nucleic acids, chromatography, enzyme kinetics, polymerase chain reactions, and cell culture. The experiments of cell culture, DNA,

RNA, and protein extraction, spectrophotometry, protein-protein interaction, and enzyme kinetics will require this fluorescence gel documentation that is an essential and necessary instrument for such a lab course. In summary, there are four labs out of fifteen designed in CHEM 319 need this instrument: lysozyme isolation and characterization, plasmid DNA isolation (Figure 2), PCR and RNA isolation and characterization.

(ii) CHEM 115 is designed to reinforce concepts learned in lectures of general chemistry and provides

an introduction into basic laboratory techniques, the experimental methods, and the presentation of scientific data, as well as direct experiences with chemical and/or biochemical principles and the properties and reactions of substances and molecules. Molecular characterization by fluorescence spectroscopy will become the fundamental technique in general chemistry lab. A new spectrophotometer would allow students to more easily analyze their data, and it reduces student frustration and facilitates conceptual understanding. CHEM 115 lab is an introductory lab required for higher level chemistry labs (inorganic, organic, analytical, physical and biochemistry labs). Fluorescence spectroscopy is a fundamental skill for upper level chemistry labs and in future careers, so improving student confidence with these instruments should help both inside and outside the classroom;

(iii) Analytical chemistry lecture is an introduction to theory and application of quantitative analysis. Analytical Chemistry Lab emphasizes obtaining and interpreting quantitative data acquired from both

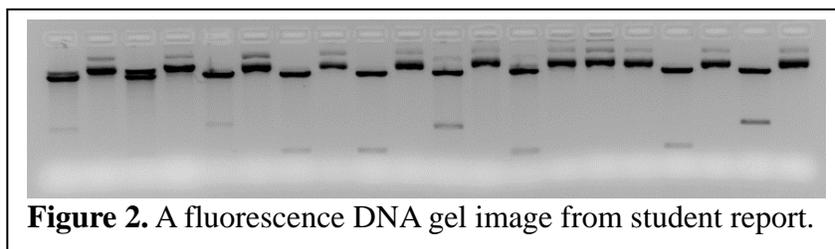


Figure 2. A fluorescence DNA gel image from student report.

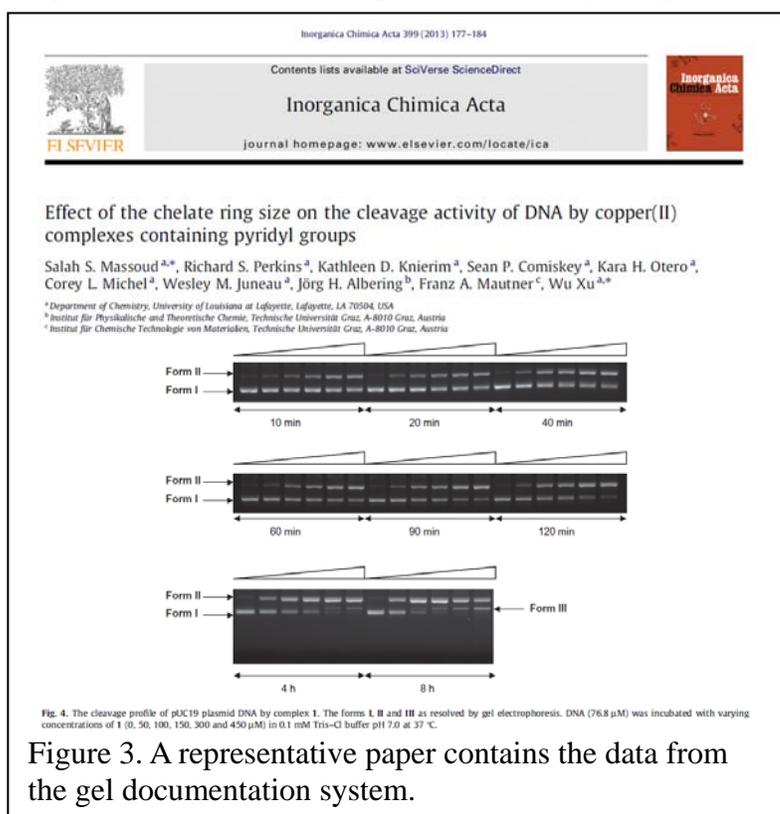


Figure 3. A representative paper contains the data from the gel documentation system.

wet chemical techniques and basic instrumental analysis through experimentation. Data acquired from a fluorescence gel documentation will be used as data sets for students to practice their analytical skills. In addition, Vitamin C is known for its role as an antioxidant. It is suggested to have a very important role in anticancer treatment, due to a possible hydrogen peroxide mediated free radical generation.

Unfortunately, it hydrolyses easily and degrades in solution, and loses its drug efficiency. It is critical to improve stability of vitamin C (VC). Micellar solutions formed by surfactants have been reported to function as microreactors and prevent VC from degradation. Lysozyme is a global protein and enzyme, is used as a model protein to probe the VC degradation. In the lab, a fluorescence detection system will be applied, to understand the types of the interactions and to investigate which is the dominate interaction(s) that control the properties of the model system (VC-lysozyme-surfactants);

(iv) In addition to the lab courses discussed earlier, the purchased equipment will be used in undergraduate research courses (CHEM 362 and CHEM 462). A number of independent and collaborative projects have been developed by our faculty members. The instrument is essential for undergraduate research. All the papers published from Dr. Xu's lab contain the data from this instrument (Figure 3).

Specifically, fluorescence gel documentation will be used to detect DNA constructs in yeast two hybrid system, quantify protein content of *Synechocystis* sp PCC 6803 wild-type and mutant strains funded by two NSF EPSCoR Awards and one BoR RCS Award, and a project to study metal-catalyzed group transfer reactions funded by BoR ITRS.

These representative projects along with other projects introduce students to real scientific investigations through project-based experiments (Figure 4). Project-based learning uses complex real world problems to captivate student curiosity, motivating them to recognize and research the abstract concepts and principles they need to know during the course of investigation. The forecasted shortfall in young scientists in the United States is of major concern to all of us. One important objective for requesting funding support is to encourage undergraduate students to gain research experience very early in the education. Collaborative research between faculty on or off campus will provide students with a group-based work environment that allows the growth of interpersonal, organizational, and teamwork skills that will better prepare students for their future scientific workforce. Prospective employers in the scientific and engineering fields have suggested that building skills for interdisciplinary problem solving are important, and this can be exercised in new and more interesting ways after employment.

B. Projected lifetime of enhancement

Fluorescence gel documentation should be in good working order and utilized in the classroom for ten to fifteen years, only requiring regular basic maintenance.

C. Person(s) responsible for

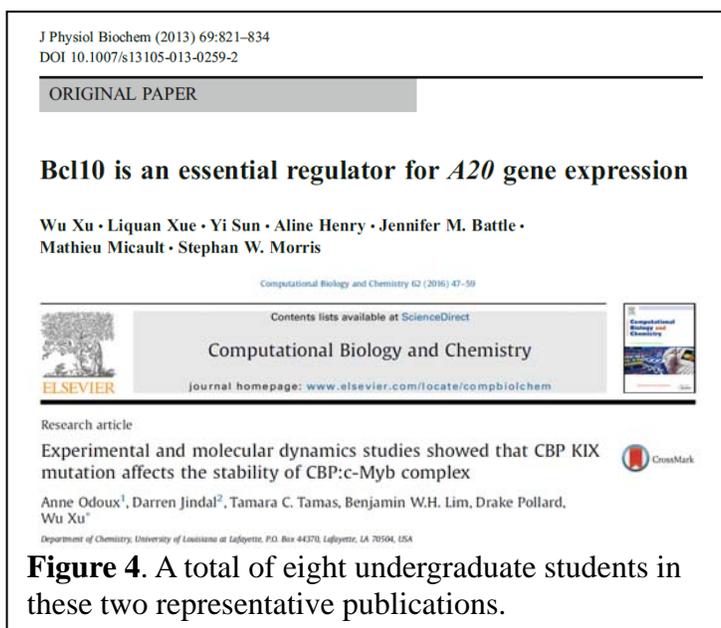


Figure 4. A total of eight undergraduate students in these two representative publications.

Implementation: Wu Xu

Installation: Wu Xu

Maintenance: Departmental committee made of up faculty member: Wu Xu

Operation: Faculty of Chemistry Department

Training: Wu Xu will conduct training for faculty members, following their training by the manufacturer

Budget Proposal (Please see the quote for details)

1. Equipment	\$13,986.00					
Catalog No.	Qty	Description	List Price	Discount	Net Price	Extension
1708270EDU	1	Gel Doc EZ System	\$7,725.00	20.00%	\$6,180.00	\$6,180.00
1708271EDU	1	UV Sample Tray	\$1,030.00	20.00%	\$824.00	\$824.00
1708272EDU	1	Sample Tray	\$1,030.00	20.00%	\$824.00	\$824.00
1708273EDU	1	Blue Sample Tray	\$1,030.00	20.00%	\$824.00	\$824.00
1708274EDU	1	Sample Tray	\$1,030.00	20.00%	\$824.00	\$824.00
1851196	1	C1000 CYCLER	\$7,495.00	40.03%	\$4,495.00	\$4,495.00
					MCHG24 1 FREIGHT CHARGE	\$15.00
					Total:	\$13,986
2. Software						\$ 0.00
		No software is required.				
3. Supplies						\$ 0.00
		No supplies are requested.				
4. Maintenance						\$ 0.00
		Routine maintenance will be covered by department.				
5. Personnel						\$ 0.00
		No additional personnel required.				
6. Other						\$ 0.00
		None				
TOTAL:						\$13,986.00

D. Other relevant information

None

E. Previous STEP projects

Dr. Xu successfully authored a STEP proposals "Smart Classrooms in Chemistry", \$30,000, funded the spring of 2014 and 2015.



**Bio-Rad
Laboratories**

Life Science Group
2000 Alfred Nobel Drive
Hercules, CA 94547
Telephone: 800-4BIORAD
Fax: 1-800-879-2289
www.bio-rad.com

Price Quotation # 16-Q33123V1

Date: July 7, 2016

Quote Valid: 08/06/2016

Dr. Wu Xu

Terms: Net 30

UNIV OF LOUISIANA LAFAYETTE

F.O.B.: FOB Destination, PPD and Add

Montgomery Hall 138

Route: B_Best Way

Department of Chemistry

Delivery: Within 30 Days, ARO

Rex Street and Saint Mary Boulevard

Sales Rep: Thao Le

Lafayette, LA 70504

510-741-5879

USA

thao_le@bio-rad.com

Phone: (337) 482-5684

Fax: (337) 482-5676

Email: wxx6941@louisiana.edu

<i>Catalog No.</i>	<i>Qty</i>	<i>Description</i>	<i>List Price</i>	<i>Discount</i>	<i>Net Price</i>	<i>Extension</i>
Quoted Item(s)						
1708270EDU	1	Gel Doc EZ System EDU	\$7,725.00	20.00%	\$6,180.00	\$6,180.00
1708271EDU	1	Gel Doc EZ UV Sample Tray EDU	\$1,030.00	20.00%	\$824.00	\$824.00
1708272EDU	1	White Light Sample Tray EDU	\$1,030.00	20.00%	\$824.00	\$824.00
1708273EDU	1	Gel Doc EZ Blue Sample Tray EDU	\$1,030.00	20.00%	\$824.00	\$824.00
1708274EDU	1	Stain-Free Sample Tray EDU	\$1,030.00	20.00%	\$824.00	\$824.00
1851196	1	C1000 TOUCH CYCLER w/96W FS RM	\$7,495.00	40.03%	\$4,495.00	\$4,495.00
MCHG24	1	FREIGHT CHARGE				\$15.00
					Total	\$13,986.00
Optional Item(s)						
ENP10026	1	Gel Doc EZ System, 1 yr FULL MAIL IN Extended Cover Service Plan. Unlimited repair inclusive of shipping, parts and labor. Computer not covered. PM not included	\$834.00		\$834.00	\$834.00
ENP10026	1	Gel Doc EZ System, 1 yr FULL MAIL IN Extended Cover Service Plan. Unlimited repair inclusive of shipping, parts and labor. Computer not covered. PM not included	\$834.00		\$834.00	\$834.00
ENP10057	1	PCR System, 1 yr FULL MAIL IN Extended Cover Service Plan. Unlimited repair inclusive of shipping, parts and labor. Includes thermal cycler and reaction module. PM not included	\$834.00		\$834.00	\$834.00
ENP10057	1	PCR System, 1 yr FULL MAIL IN	\$834.00		\$834.00	\$834.00

Shipping prepaid and added to the invoice unless otherwise stated. Please see attached terms and conditions.

Extended Cover Service Plan. Unlimited repair inclusive of shipping, parts and labor. Includes thermal cycler and reaction module. PM not included

Thank you for the opportunity to submit this quotation. Please contact me if you have any additional questions.

Thao Le
Phone: 510-741-5879
Email: thao_le@bio-rad.com

To place an order:

Phone: 1-800-4BIORAD
Fax: 1-800-879-2289
Email: lsg.orders.us@bio-rad.com

Mail: Bio-Rad Laboratories, Inc
2000 Alfred Nobel Drive
Hercules, CA 94547

PrimePCR assays and panels can only be ordered online and through your Bio-Rad PunchOut site.
Or click [[here](#)] to add items to Bio-Rad Shopping Cart.

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Wu Xu

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Gel Doc XR questions; Bio-Rad Case 01028875From: [Bio-Rad Technical Support](#)To: wxx6941@louisiana.eduCc: [thao le](#)

Hello Wu,

Thao Le forwarded me your questions about the Gel Doc XR firewire system. Here are the answers:

(i) our instrument has been 10 year old;

The Gel Doc XR firewire (76S/9021) shipped on 12/14/2007.

(ii) Bio-Rad cannot replace camera due to ...;

The Gel Doc XR firewire camera cannot be repaired or replaced directly because we no longer have the camera in stock.

(iii) You and I spent lot of efforts (how many emails, and days) to solve the problem.

We spent a month (April through May) trying to troubleshoot and replacing parts, but apparently it was not the camera.

Please let us know that you received this email, and if there is anything else we can do for you.

Thank you,
Kate

Kate Clark, PhD
LSG Technical Support
Bio-Rad Laboratories
TEL 800-424-6723, opt 2

From: Bio-Rad Technical Support <support@bio-rad.com>
Sent: Friday, April 08, 2016 5:02 PM
To: wxx6941@louisiana.edu
Subject: RE: Gel Doc XR firewire; Bio-Rad Case 00977210

Hi Wu,

I did a test on our Gel Doc XR firewire camera.

- When only the power supply is plugged in (no firewire connection), then the camera LED flashes green and yellow, then goes to all green.

- When only the firewire cable is connected (no power supply) there is no LED light at all.

So it sounds like your camera must be getting some power from the power supply, but might not be getting enough. However, the flashing could mean that the camera is not working correctly since the flashing only normally indicates it is collecting an image, but in this case it is not doing that.

I'm not sure that information will help determine the source, but it might help you sort it out.

Have a good weekend,

Kate

----- Original Message -----

From: Wu Xu [wxx6941@louisiana.edu]
Sent: 4/8/2016 1:34 PM
To: support@bio-rad.com
Subject: RE: Gel Doc XR firewire; Bio-Rad Case 00977210

Hi Kate,

Thank you for the email. I just rechecked it. LED is still orange. It should have the power since yellow light was off if I unplug camera power supply. Could yellow/orange be due to the problem of Firewire cable or Firewire PCI card?

Wu

-----Original Message-----

From: Bio-Rad Technical Support [mailto:support@bio-rad.com]
Sent: Friday, April 08, 2016 1:42 PM
To: wxx6941@louisiana.edu
Subject: RE: Gel Doc XR firewire; Bio-Rad Case 00977210

Hi Wu,

I did find some more information about the LED, and I'm not sure why you see might be seeing yellow. If the power supply is not working, then the camera pulls power only from the computer. This power is not enough for the system to function, so the power supply is necessary.

I wonder if the camera power supply is not providing enough power (or no power).

The LED has three normal states:

1. Off.

This indicates that the camera is off.

2. Steady green.

This is the normal state of the XR camera when it is receiving power, and there is no image acquisition.

3. Flashing green and red.

The camera is acquiring images.

If the LED is not green when the camera is plugged in, first check that the wall plug is providing power to the camera power supply. If needed, replace the camera power supply (catalog number 10000579).

All the best with getting this system working again.

Kate

----- Original Message -----

From: Bio-Rad Technical Support [support@bio-rad.com]

Sent: 4/8/2016 11:36 AM

To: wx6941@louisiana.edu

Subject: RE: Gel Doc XR firewire; Bio-Rad Case 00977210

Hi Wu,

That is very good news.

Hopefully replacing the firewire card and/or the cable will fix the problem.

Please let us know if there is anything else we can do to assist you.

Thank you,

Kate

----- Original Message -----

From: Wu Xu [wx6941@louisiana.edu]

Sent: 4/8/2016 10:30 AM

To: support@bio-rad.com

Cc: chris_lunn@bio-rad.com

Subject: RE: Gel Doc XR firewire; Bio-Rad Case 00977210

Hi Kate,

Thank you for the information. I just checked LED on the camera. I can see orange/yellow light. It seems that Gel Doc XR firewire Camera power supply is working.

Sincerely,

Wu

Chris, could you please email me a quote for Firewire cable - IEEE 1394 6-Pin/6-Pin 400 Mbps FireWire Cable (Bio-Rad cat# 1708177)?

Dr. Wu Xu
Associate Professor of Biochemistry
Department of Chemistry
Room No. 138, Montgomery Hall
300 E. St. Mary BLVD
P.O. Box 44370
University of Louisiana at Lafayette
Lafayette, LA 70503
Telephone: 337-482-5684 (office)
 337-482-6739 (lab)
Fax: 337-482-5676
Email: wx6941@louisiana.edu

-----Original Message-----

From: Bio-Rad Technical Support [mailto:support@bio-rad.com]
Sent: Friday, April 08, 2016 11:39 AM
To: wx6941@louisiana.edu
Subject: Gel Doc XR firewire; Bio-Rad Case 00977210

Hello Wu,

Thank you for contacting Bio-Rad Technical Support about Gel Doc XR firewire system that is not talking to the computer.

The first things to do are these:

- 1) Check green LED on camera is working.
- 2) Turn everything off, and unplug the camera. Turn on the camera first, then hood and computer.

Here are the specifications for the parts we discussed:

- Firewire cable - IEEE 1394 6-Pin/6-Pin 400 Mbps FireWire Cable (Bio-Rad cat# 1708177)
- Firewire PCI card - 1394 6-Pin, 400 Mbps FireWire
- Gel Doc XR firewire Camera power supply - Bio-Rad 10000579

If it is not any of these, then it is the camera (which cannot be fixed at this point).

Your local rep is Chris Lunn (chris_lunn@bio-rad.com).

Please let us know that you received this email, and if there is anything else we can do to assist you. As always, to contact us call Technical Support (800-424-6723, opt 2) or reply to this email message. You can refer to the Case Number 00977210.

You might receive a 1-question survey. Please tell us about your experience with Technical Support at Bio-Rad.

Thank you,
Kate

Kate Clark, PhD
LSG Technical Support
Bio-Rad Laboratories
TEL 800-424-6723, opt 2

Is Bio-Rad your Bench Partner yet? Check out our support videos on YouTube.
<https://www.youtube.com/playlist?list=PLrAEgIY86I6yFuCRe2rwzuAmcg0NMgxPB>

You can find additional videos about many Bio-Rad products by clicking the following link:
<https://www.youtube.com/user/BioRadLifeScience/playlists>

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Search

Wu Xu

Mail Address Book Calendar Tasks Preferences Gel Doc

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Gel Doc

From: Justin W Campbell

To: Wu Xu

Dear Dr. Xu,

I am sorry to hear that your fluorescence gel documentation was broken and cannot be repaired. I remember that it had to install a new firewire card, to reinstall software and to check connections between computer and gel documentation solve the problem. After two hours, you seem frustrated, and are concerned about biochemistry courses in which this is

Please feel free to contact me if you need any help or support in the future!

Good luck for your proposal application!

Justin Campbell
IT Tech Support Specialist 2
The University of Louisiana Lafayette
justinc@louisiana.edu
UL Helpdesk#2HELP