# **Standard Operating Procedure (SOP) Title: Use of UV light for TLC visualisation**

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| Assessor: | Joshua Linfoot | | | Location of work: | MSRH 502 |
| Principal Investigator: | | | Prof Alan Spivey | | |
| Date of approval: | | 13/09/2021 | | Date for review: | 13/09/2022 |

## **Justifying the hazards:**

Ultraviolet (UV) light presents hazards to health through its damaging effect on skin and on the eyes. Some substances invisible to the human eye can be monitored using UV light. A UV lamp/cabinet is used to visualise thin layer chromatography traces.

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| Identify hazards with specific risk assessments and a College or a departmental approval process | | | |
| [Ionising radiation sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) |  | [Biological sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) (microorganisms, human/animal tissues, plants) |  |
| [Class 3R, 3B or 4 Lasers](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/lasers/SitePages/laserhome.aspx) |  | [Offsite work](http://www.imperial.ac.uk/safety/safety-by-topic/off-site-working/) |  |
| Confirm if [Lone working](https://www.imperial.ac.uk/safety/safety-by-topic/lone-working/) is permitted with this SOP?  If it is permitted, describe the control measures for lone workers: | | | |

## **Preparing for the SOP:**

* **DON’T** use UV sources without appropriate protection (the lamp should be shielded in a box, specialist safety specs should be used).

Note: UV radiation sources must carry the appropriate hazard warning label.

## **Procedure:**

1. Switch on main power supply.
2. Switch on “visible light”.
3. Place TLC plate in the UV lamp chamber.
4. Switch “visible light” to “UV light” of a required length.
5. Visualise the sample through the glass window of the chamber.
6. Note down the observation, switch off the UV light and remove the TLC plate.

## **Disposal:**

Dispose of TLC plates as Silica waste (hazardous waste) in a yellow-labelled plastic container. Dispose of UV lamps as hazardous waste.

## **Personal Protective Equipment (PPE):**

Lab coat, appropriate gloves, safety glasses

## **Risk Analysis of SOP and emergency procedures:**

(In addition to [Safe Lab Practice](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/SitePages/Basic%20Laboratory%20Rules%20for%20All%20Laboratories%20in%20FoNS.aspx))

### **Always remember to include fire associated risks and control measures where appropriate**

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| Hazard | Raw risks | Current control measures | Residual risk  (Low/Med/High) |
| Glassware and glass parts | Cuts and splinters from broken glass | Visually inspect glassware for cracks and other defects before and after use. If glassware is damaged, arrange for repair or dispose of. | Low |
| Hazardous materials | Exposure via inhalation of hazardous reagents | No work with hazardous reagents outside of containment, ensure containment has appropriate extraction and filters (where relevant).  Ensure the equipment and sample preparation area cleaned after each use.  (Include hazards and controls of associated reagents in this or separate risk assessment) | Low |
| Electrical equipment and cables | Electrocution and electrical fire | Commercial equipment, no modifications to be made.  Regular portable appliance testing (PAT).  Visual inspection of equipment and cables prior to each use.  Immediate clean of any spills.  Ensure plugs, sockets, cables and equipment positioned so as not to be at risk of ingress from liquids.  Ensure a CO2 extinguisher is available.  Ensure easy access to the power supply. | Low |
| UV light | Cataracts, skin and/or eye burns | Use UV in enclosed equipment that prevents UV exposure to the operator.  Where possible incorporate an interlock that shuts off UV light source if activated.  If required, ensure personal protective equipment is designed to protect from UV light.  If using a UV transilluminator, wear a UV protective face shield.  Use UV protective viewing filters on TLC viewing boxes (UV protective eyewear should only be required if exposure cannot otherwise be avoided). | Low |
| Heavy item | Crushing injury | Equipment securely located on suitable work surface.  No lifting or moving of equipment. | Low |

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| **Additional control measures to minimise residual risks** | **Implementation date** |
| Whenever possible, UV sources should be shielded within light boxes constructed of a material impenetrable to UV radiation. |  |

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| **Who may be harmed** | |
| Staff / students | Cleaners / Engineers |
| Supporting staff | Others (specify): |

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| **Emergency procedures** – describe the response(s) required by the user and lab members |
| In the event of an incident involving the **equipment itself,** turn off the power supply, unplug and place a sign on the equipment stating it is not to be used. Arrange for repair.  **Electrical shock** - switch off power. Do not touch the affected individual until the power is definitely off. Seek immediate medical attention by calling 4444 (+44 20 7589 1000) and contacting nearby First Aider. Use non-conductive lever to remove the individual from the electrical source (e.g. a dry wooden broom handle).  **Fire** – If ignition occurs but extinction is managed in a controlled manner, ensure a SALUS report is completed at the earliest opportunity. If the fire is not controllable, you must activate a fire alarm call point and evacuate. Inform Fire Safety Officers or Security where the fire is located and what it involves when they arrive at the building.  Clear up **broken glass** using dustpan and brush, tweezers or other suitable equipment to prevent exposure to the glass then place into the appropriate waste bin (clean or contaminated glassware).  If anyone is injured while using the equipment contact first aider.  If any **cuts or exposures** to hazardous substances, ensure affected area is held under running water for at least 15 mins and the wound is encouraged to bleed, ask for first aid assistance. If water is not available use alcohol free wipe from the First Aid Kit and dress the wound. Seek further medical attention if required.  If **crushing injury** - contact first aider immediately – use ice/cool pack (if on hand only) to reduce immediate swelling – seek medical attention if required.  **UV exposure -** For UV radiation overexposure of the eye, place a sterile dressing over the eye and seek medical attention. For UV radiation over exposure of the skin, apply cold water or suitable cold packs to the skin burns and get medical attention. |

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| Recommended trainings and records: |
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| List of individuals competent to demonstrate safe work practice and train others (level 1 trainers): | Names of those that have been trained and can work unsupervised (level 2) and date training completed: |
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