LASER ALIGNMENT PROCEDURES

An alignment or tune-up procedure is required for "beam out of the box" or from the exit port of the laser. Another procedure is required for alignment or tune-up of the internal components of some multi wavelength lasers such as, but not limited to, Ti: Saph lasers. Often the manufacturer will provide alignment services. For other circumstances, the manufacturer's operations manual should provide advice for internal alignment. You may reference the manufacturer's procedure or develop your own protocol to include in your SOP (Safe Operating Procedure) as an appendix.

Please use the following guidelines for development of your alignment procedure external to the "box". Please add to this document as needed. Attach the procedure as an appendix to your SOP.

Attaching alignment procedures as an appendix will make your SOP more flexible for revision or modification to accommodate changes in your research.

- Allow only trained personnel to be present during alignment. Minimize the number of personnel present during the alignment. Only trained personnel may perform the alignment. All present must wear appropriate eyewear unless the beam at any viewing location is well below the MPE at that observing location. Protective clothing may be required (e.g. UV lasers).
- Do not look directly at beam!
- If possible, avoid using beam paths that are at sitting or standing eye level.
- Where feasible, use low power (class 2 or 3A) visible lasers to simulate the path of high power or invisible lasers.
- Whenever possible, reduce all high power laser beams to the minimum possible power.
- Where feasible, terminate laser beams and specular reflections on diffuse reflecting beam blocks.
- Locate any specular reflections of the beam and block them as close to the source as possible, before moving to the next optical component or section.
- Place beam blocks behind optics (e.g. mirrors) to terminate beams that might miss optics during the alignment.
- Use beam shutters (on laser) to block high power beams any time they are not actually needed. Be sure to terminate the beam at the end of its useful path.
- Do not point the laser at mirror like surfaces.
- Use phosphor cards, UV/IR viewers, video cameras or other display devices to locate invisible beams.
- Be sure all beams and reflections are properly terminated prior to high power operation.