

The problems in this set are “research” problems, rather than the usual analytical type. You should look up the requested information in a book, a catalog, or on-line.

1. **Laser Outputs:** For each of the following lasers, find the typical output wavelengths (or range if the laser is tunable) and whether the laser is typically pulsed
 - (a) XeCl excimer laser
 - (b) Alexandrite solid state laser
 - (c) Copper vapor laser
 - (d) HeCd laser

2. **Laser Medium:** For the Cr:Forsterite laser medium, find
 - (a) the range of laser wavelengths possible
 - (b) typical pumping wavelengths
 - (c) the upper laser level lifetime τ_2 (sometimes this is called the “fluorescence lifetime” since it describes how long the medium will continue to fluoresce after pumping stops.)
 - (d) the estimated radiative lifetime t_s (or t_{sp}).