30/60 credits Master's thesis project for Materials Chemist

We are looking for highly motivated students who wants to explore the field of photon upconversion (Figure 1).

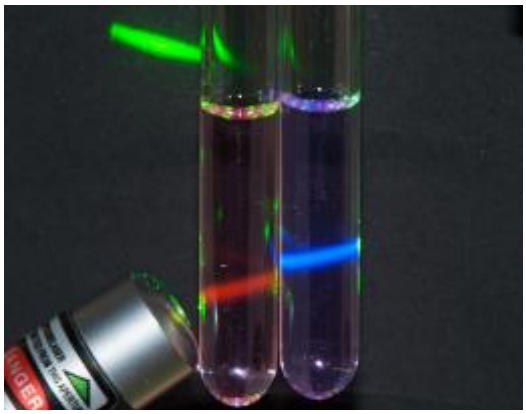

Figure 1. Example of normal stokes emission (red) and upconverted anti-stokes emission (blue) when irradiated by a green laser.

Photon upconversion is a process that generates a high-energy photon from the absorption of two low-energy photons. This has the potential of improving solar cells and other solar energy techniques.

Studying upconversion materials combines the areas of physical chemistry, materials chemistry, nanomaterials, and organic chemistry. Students interested in these fields here have the opportunity to work in a new, rapidly growing research field.

Projects can be designed according to the student's interests, but some possible projects are to:

- Spectroscopically study upconversion materials, and the effect of the solvent viscosity.
- Incorporating upconverting materials into polymer nanoparticles.
- Organic synthesis of new upconverting materials

During the project you will become familiar with techniques such as; absorption, fluorescence, transient absorption, time-resolved fluorescence, synthetic procedures and working under inert atmosphere.

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