

## The quest for multiphoton emitting phosphors

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The quantum efficiency of lighting phosphors applied in current “state-of-the-art” fluorescent lamps is generally 90 percent. Lighting accounts for 14% of the total energy used in the US and 21% of the electricity consumed in the building sector. With the emphasis on reduced lighting use and concurrently reducing pollution from fossil fuel power plants, there is an interest in improved general-purpose illumination technologies. Further major improvements in fluorescent lighting efficiency may be sought in the development of more efficient means of generating visible photons from the phosphors. The development of practical multiphoton emitting phosphors that produce more than one visible photon per incident ultraviolet photon, using a controlled photon cascade process, can significantly improve the overall conversion of the fluorescent lamps. It can also lead to the development of new technologies, such as mercury free fluorescent lamps with an overall energy conversion efficiency that is comparable to the existing low pressure mercury based lamps.

In this talk we will review the concept of multiphoton emitting phosphors [1-5] and their practical importance to the lighting and display industries and describe the recent significant efforts to develop such phosphors

### References

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