

# **Ultrafast Lasers, multiphoton absorption, whispering gallery modes and applications**

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Time-resolved study of a system reveals its dynamics. A large number of events in nature take place in the time scales of nano, pico or femto seconds. Time-resolved spectroscopy therefore, is interdisciplinary in nature. One of the examples of ultrafast time-scale events is the carrier dynamics in metals/ semiconductor nanoparticles. Combined with the nonlinear optics (which is a subject within the ultrafast lasers) exotic phenomena such as harmonic generation can be achieved. In this talk, a brief account of the activity at IIT Madras in topics such as optical parametric amplification, whispering gallery modes, multiphoton induced fluorescence and Förster resonance energy transfer will be given.