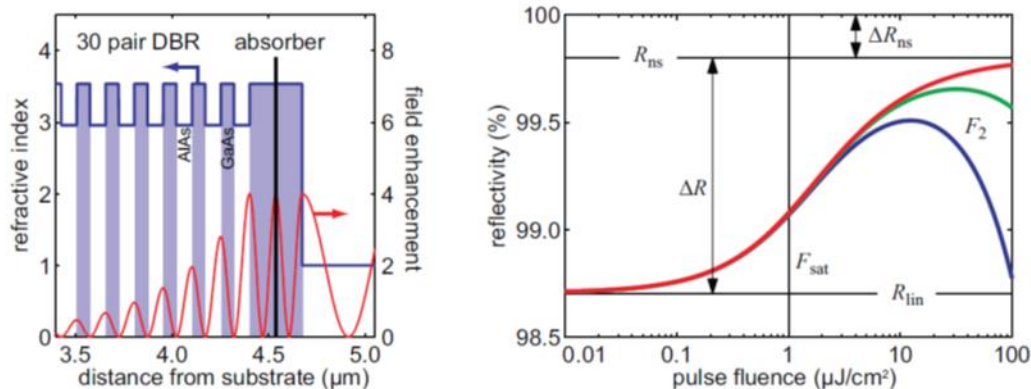


BSc Thesis: Optical characterization of semiconductor saturable absorber mirrors

Semiconductor saturable absorber mirrors (SESAMs) are a key component for passively mode-locked lasers. Semiconductors are ideally suited as saturable absorbers because they can cover a broad wavelength range and yield short recovery times, supporting the generation of picosecond to femtosecond pulse durations.

A SESAM has several important parameters: the modulation depth, i.e. the difference in reflectivity between a fully saturated and an unsaturated SESAM, the nonsaturable losses, the saturation fluence, and the recovery time. These parameters need to be known precisely for designing and building a stable, passively mode-locked laser.



Reference

U. Keller et al., "Semiconductor Saturable Absorber Mirrors (SESAM's) for Femtosecond to Nanosecond Pulse Generation in Solid-State Lasers," IEEE JSTQE 2, 435 (1996).

Your task:

Your task is to build a femtosecond pump-probe setup for the optical characterization of SESAMs. With this setup, you should perform highly accurate measurements of the nonlinear optical reflectivity and the relaxation time of SESAMs that are required for excellent mode-locking.

Required skills:

- Interest in optics
- Interest in experiment-computer interaction
- Hands-on and practical attitude

You gain:

- Femtosecond laser skills, ultrafast spectroscopy skills
- Know-how about lasers and carrier dynamics in semiconductors

Contact:

If you are interested, please contact:

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