

Téma práce:

Cryogenic microchip nanosecond laser based on Ytterbium or Thulium doped laser materials

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Abstrakt:

The goal of this work is cryogenic microchip laser operation of Yb-doped and Tm doped solid-state materials at liquid nitrogen temperature. Laser materials such as Yb:YAG, Yb:Lu₂O₃, Yb:CALGO, Tm:YAP, Tm:Y₂O₃ etc. will be characterized at cryogenic temperatures with the different transmission of output coupling for CW laser operation. Nano second pulses will be generated using Saturable absorbers such as Cr:YAG, Cr:ZnS and Cr:ZnSe. The student who is involved will build and test the microchip cryogenic laser resonators by implementing and exploring the capabilities of the above materials. This study will lead to a deeper understanding of the fundamental physical processes of pulsed cryogenic lasers and eventually for real-world applications.