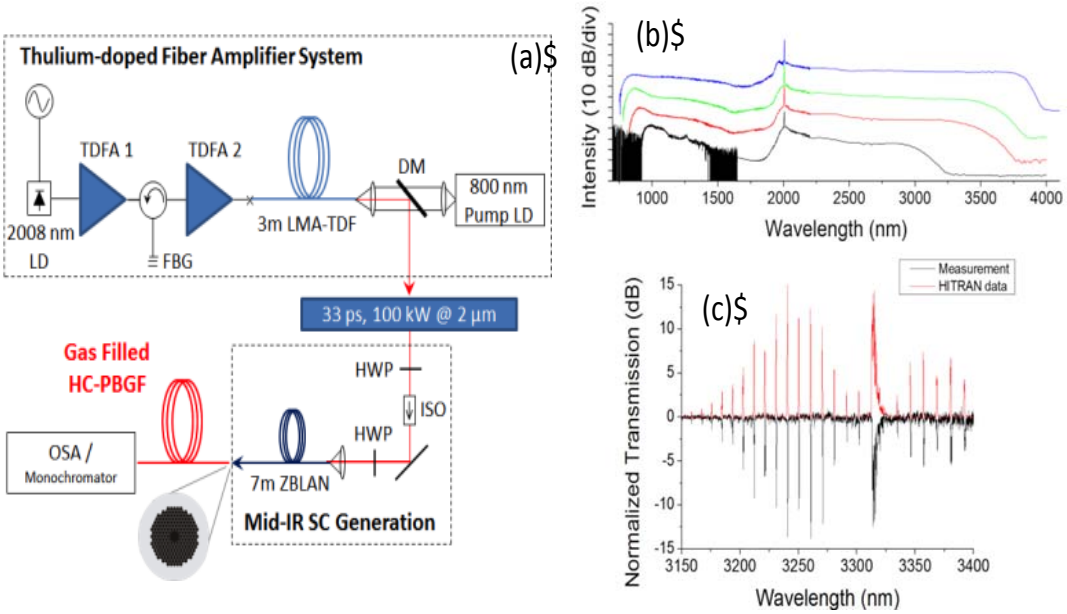

Laser, Mid-IR SC source and associated gas sensing system developed within the ADMIRATION PROJECT.

(a) Schematic setup of high sensitivity fiber-based gas sensing. The high power diode-seeded Thulium-doped fiber amplifier (TDFA) system is followed by a mid-IR supercontinuum (SC) generation stage in nonlinear ZBLAN fiber and a hollow-core photonic bandgap fiber (HC-PBGF) filled with the gas under test. (b) Examples of generated mid-IR SC spectra spanning 750 – 4000 nm. (c) Absorption spectrum of 1000 ppm methane gas in nitrogen detected in 1.3 m of HC-PBGF (bottom) and comparison with theoretical data (top).