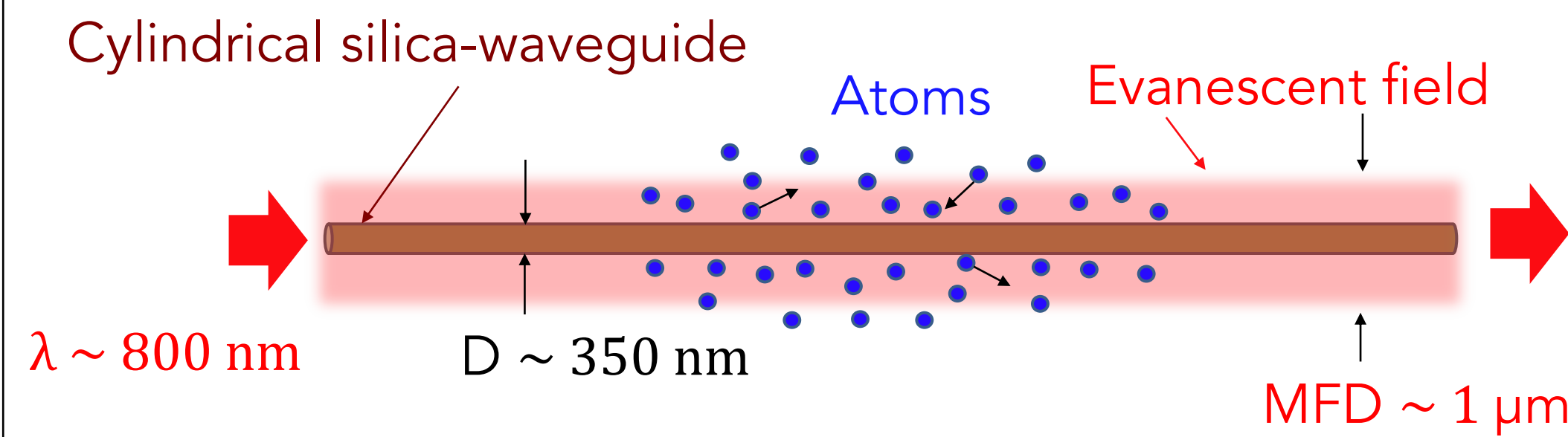
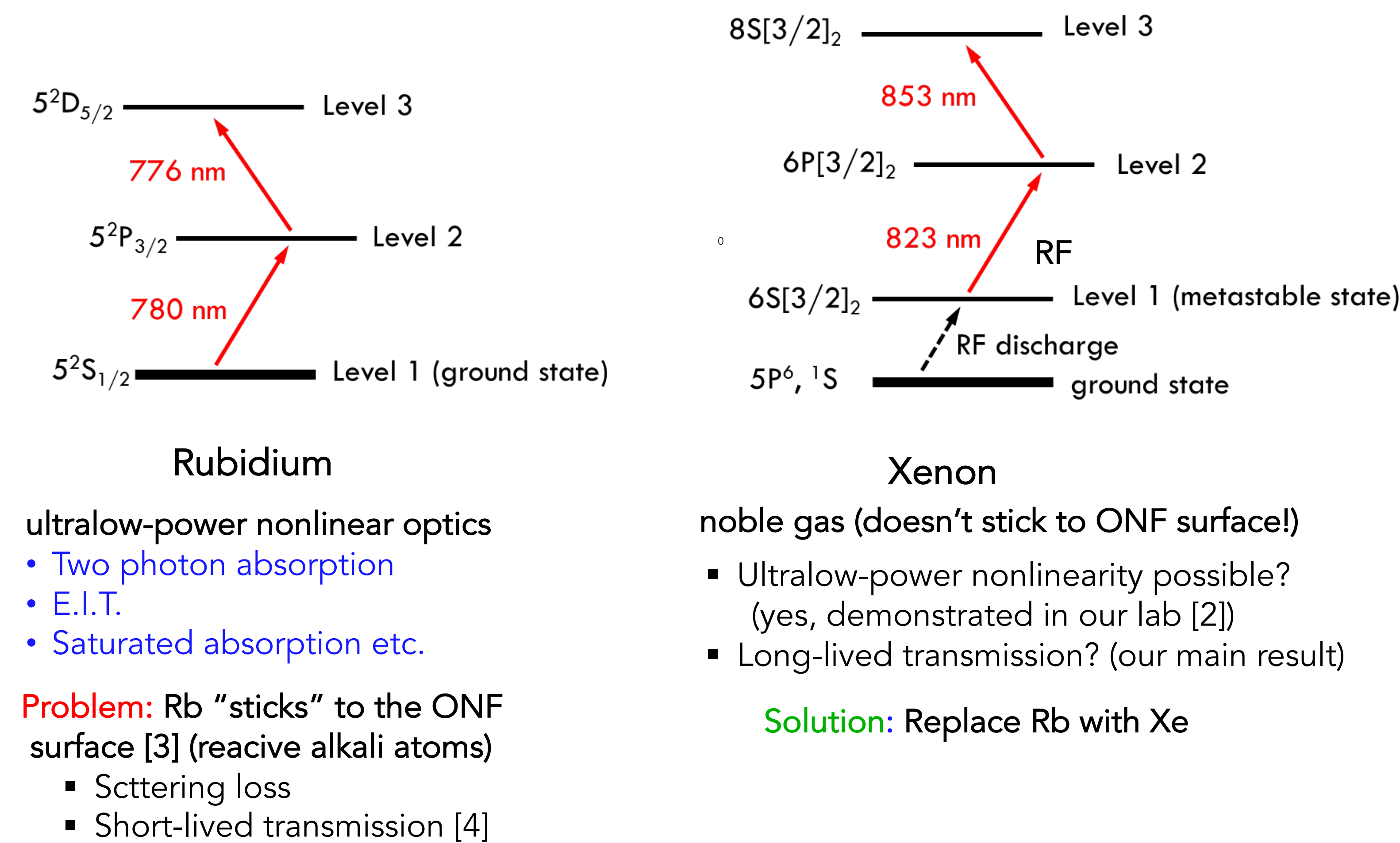


Optical nanofibers (ONFs) in atomic vapors

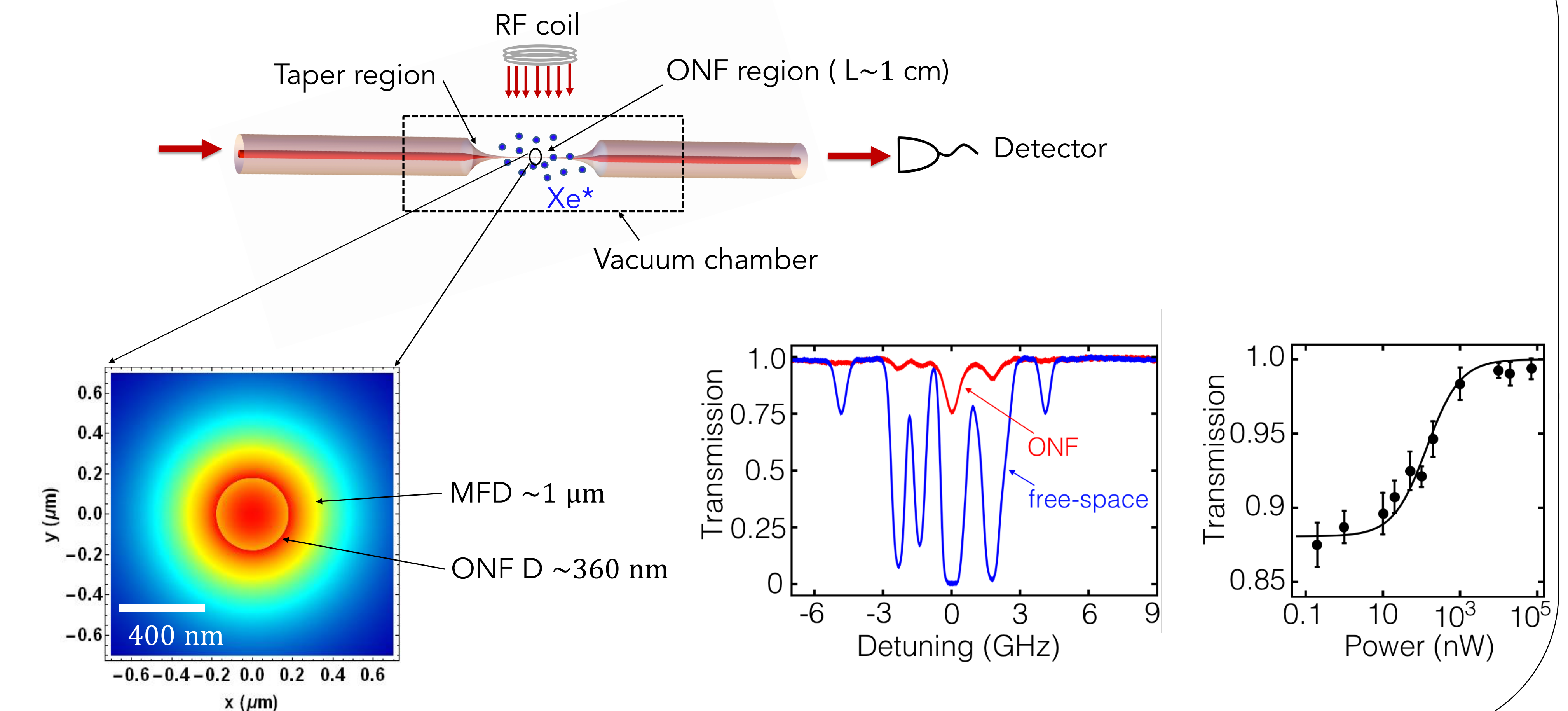


- Ultralow-power nonlinearity (~nW level) is obtained by
 - Extreme mode confinement to realize large E-fields ($E \sim 1/\sqrt{V}$) [1]
 - Atoms as the "material" (resonant!)
- Experiments with ~100 photons (and ~100 atoms)

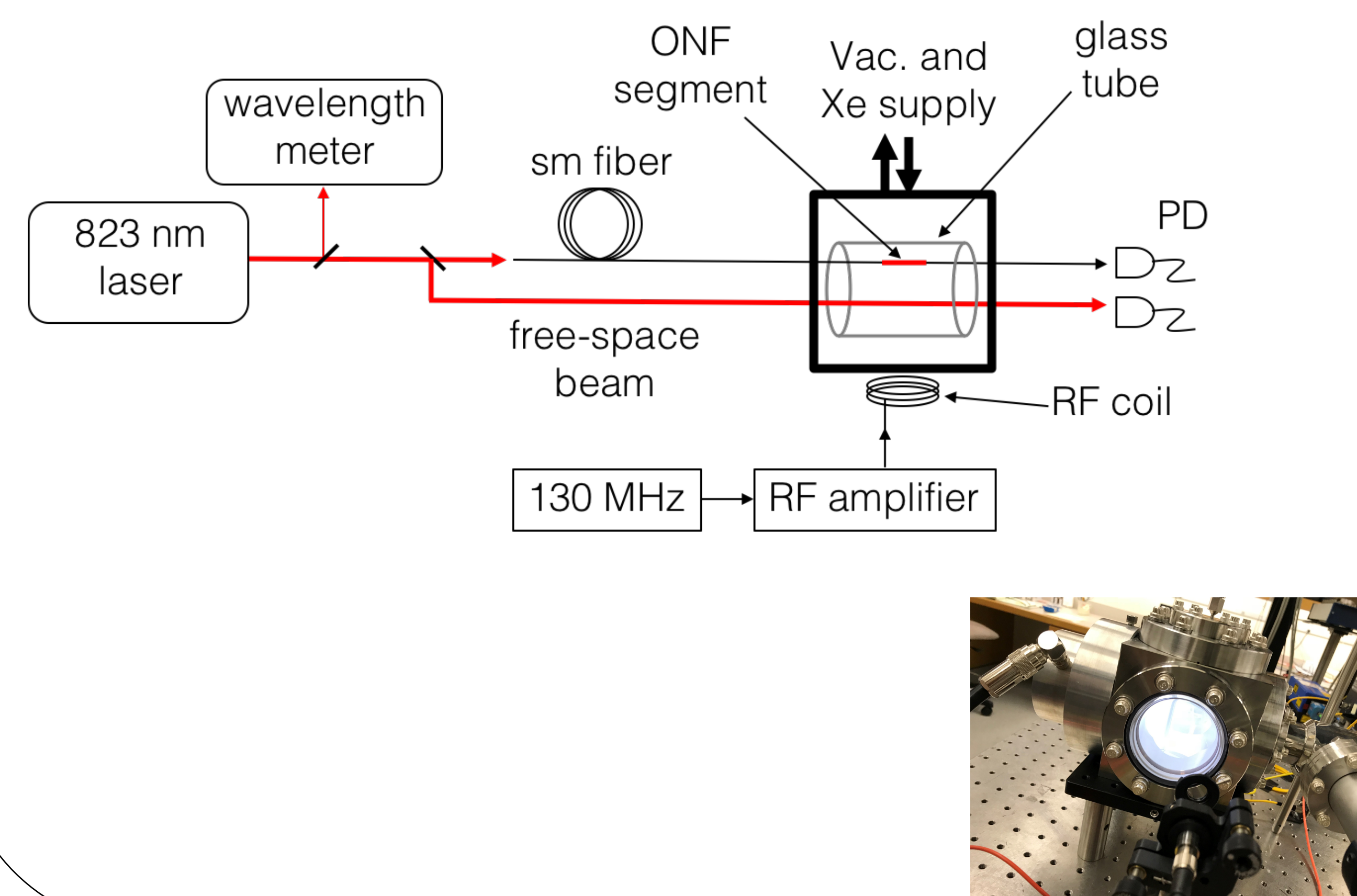
Choice of atoms



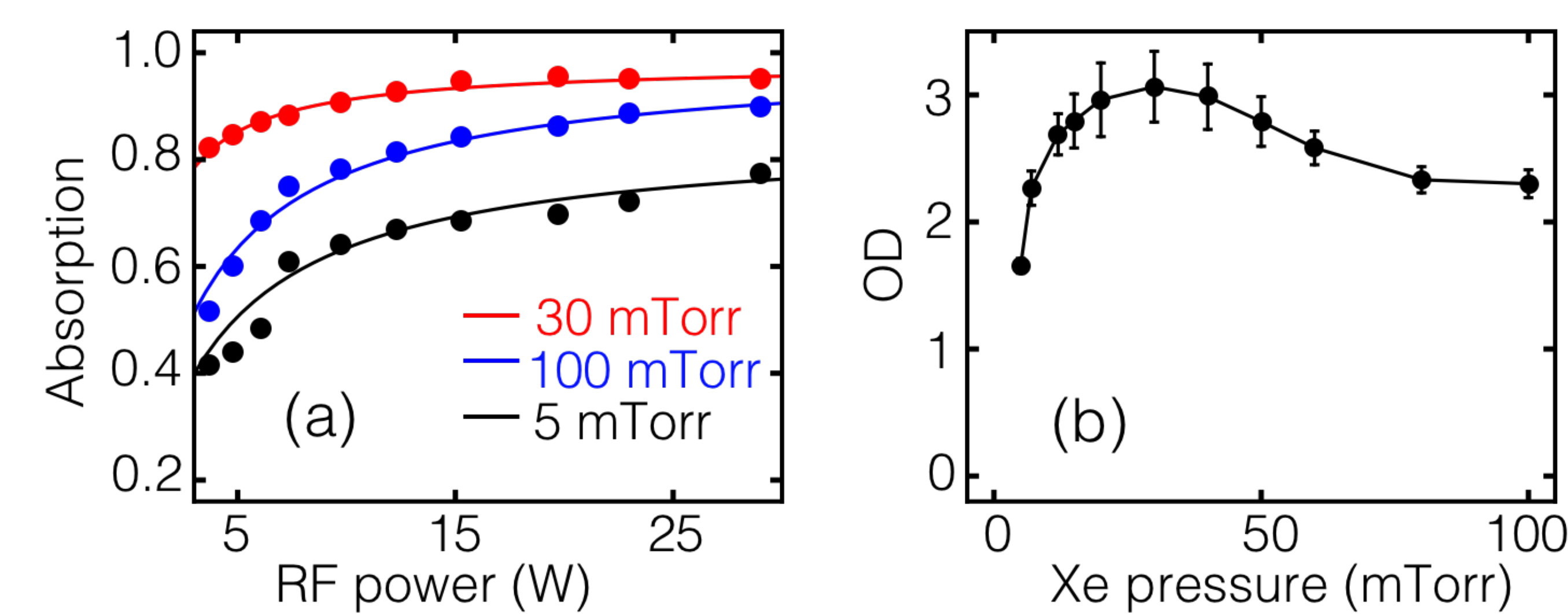
Experimental overview: Transmission measurements



Experimental design

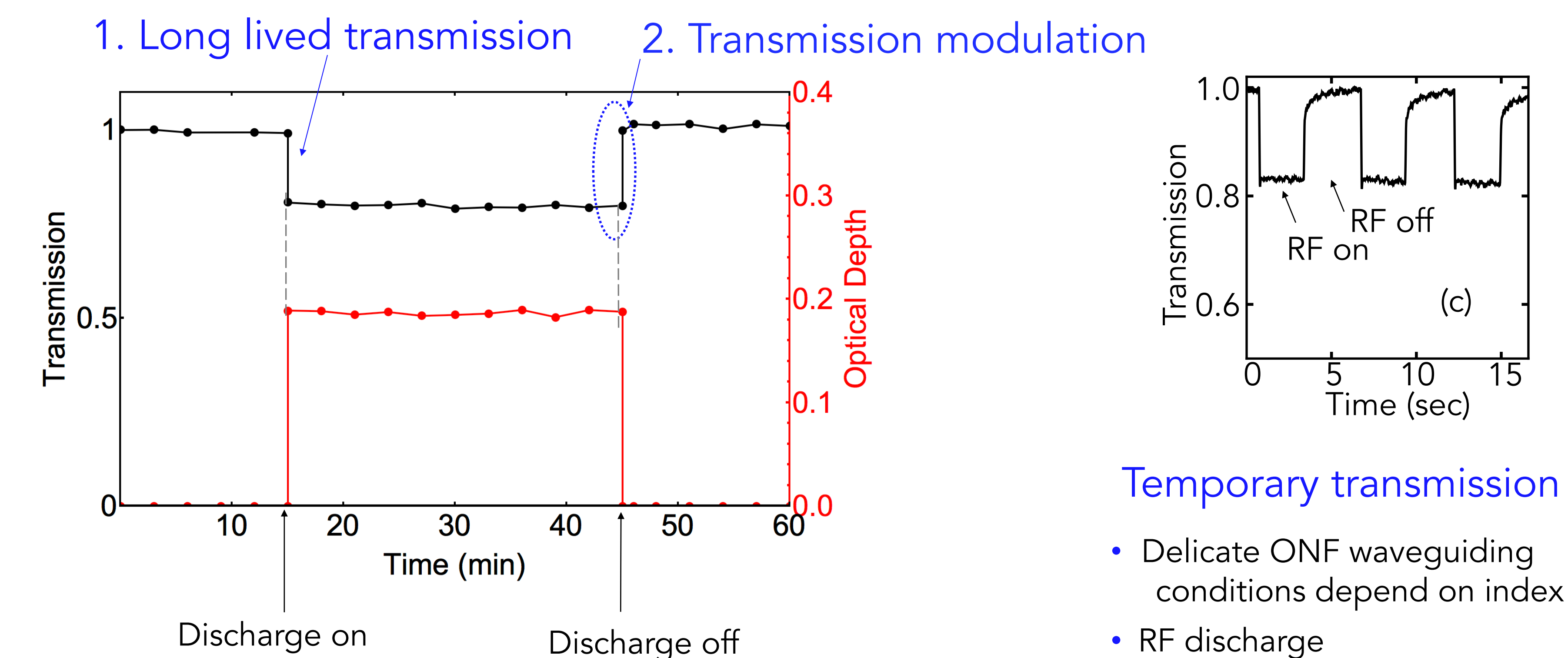


Optimizing Xe* density



- Optimum Xe* density $\sim 2 \times 10^{11}/\text{cm}^3$

Long-lived ONF in Xe*



Temporary transmission drop

- Delicate ONF waveguiding conditions depend on index contrast
- RF discharge
 - Plasma index (cladding Δn)
 - ONF heating? (core Δn)