

**European Network on New Sensing Technologies for Air Pollution
Control and Environmental Sustainability - *EuNetAir*
COST Action TD1105**

INTERNATIONAL WG1-WG4 MEETING on

New Sensing Technologies and Methods for Air-Pollution Monitoring

European Environment Agency - EEA

Copenhagen, Denmark, 3 - 4 October 2013

POSTER SESSION

Action Start date: 01/07/2012 - Action End date: 30/06/2016 - Year 2: 2013-2014 (*Ongoing Action*)

**FIBER LOOP RING DOWN SPECTROSCOPY
FOR TRACE CHEMICAL DETECTION**

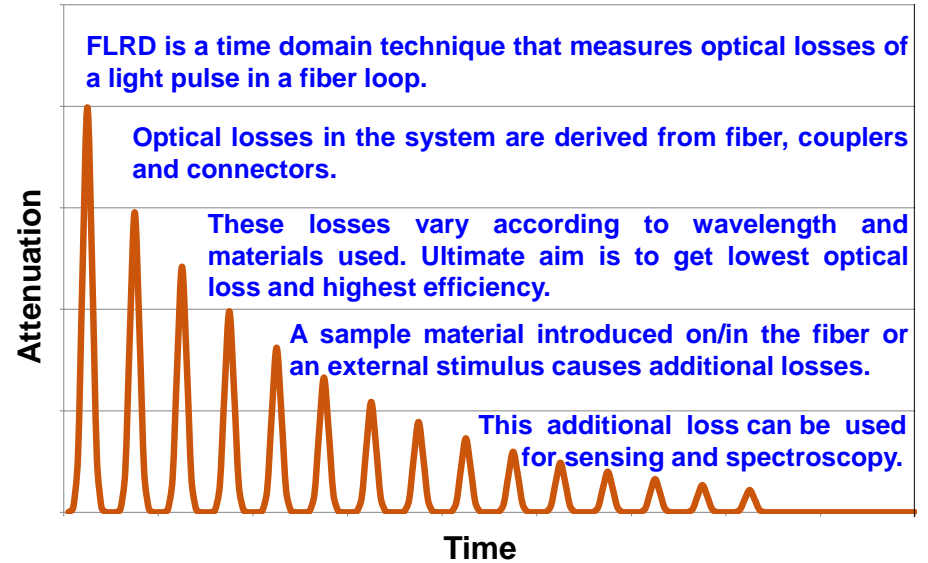
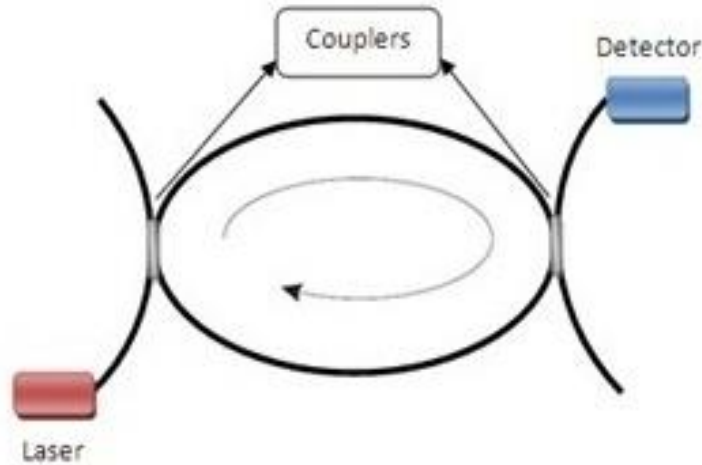


M. Fatih Danişman

WG 1, WG2 member

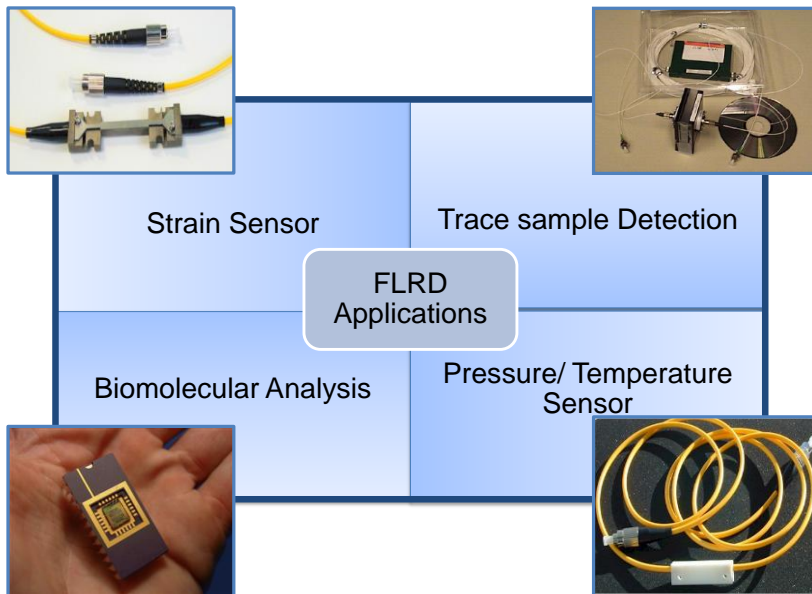
Middle East Technical University / Turkey

FIBER LOOP RING DOWN SPECTROSCOPY

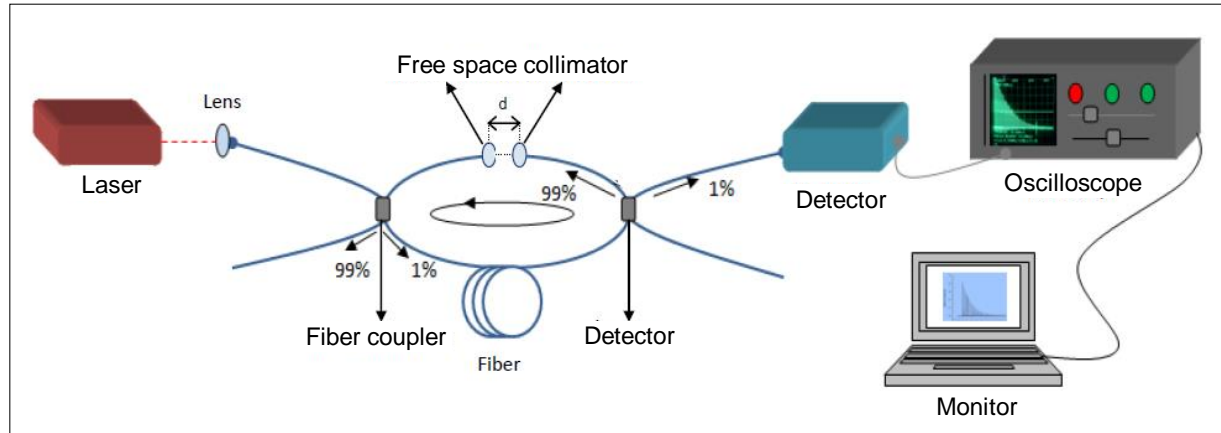
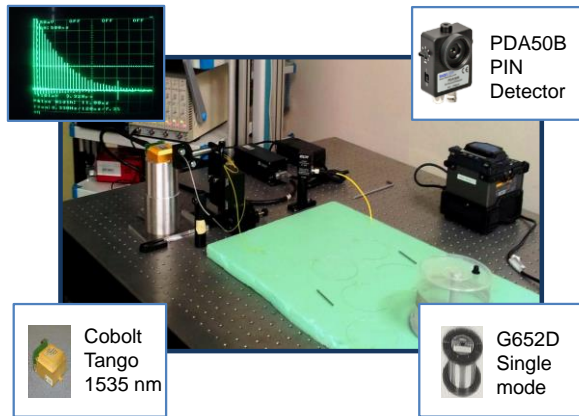


$$I = I_0 e^{-\frac{t}{\tau}} \quad \tau = \frac{nL}{c(A+B)} \quad \tau_0 = \frac{nL}{cA}$$

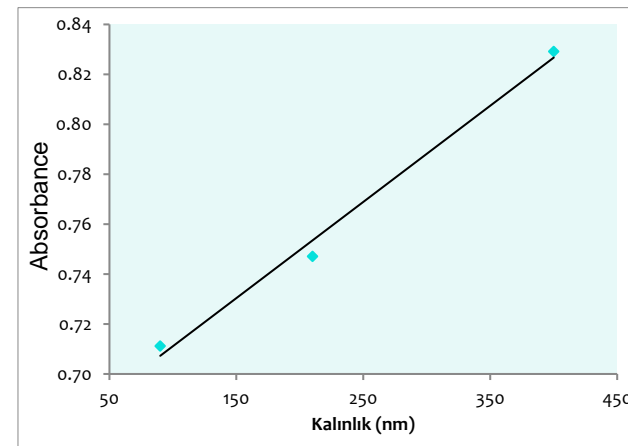
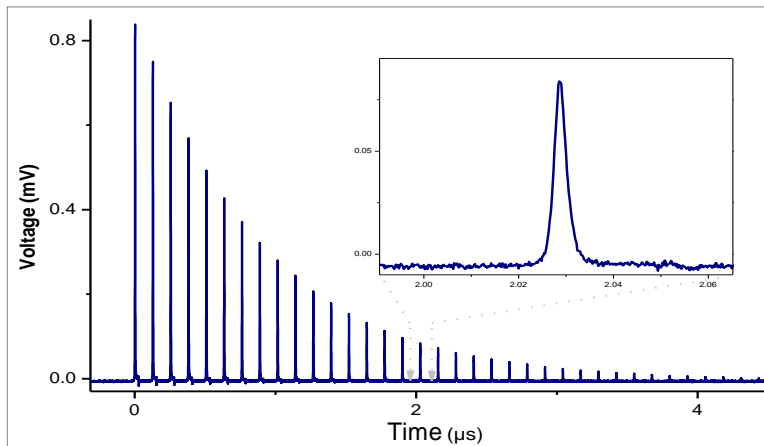
- I:** light intensity at time t
- L:** length of the fiber
- c:** speed of light
- n:** fiber refractive index
- A:** fiber transmission loss of the light in each round trip(%)
- τ_0 :** time required for I to decrease to I_0 (ring down time)
- B:** total optic losses in the system except A
- τ :** time required for I to decrease to I_0 in the presence of sample



RESULTS



Thickness of amorphous silicon films on glass could be measured with this setup



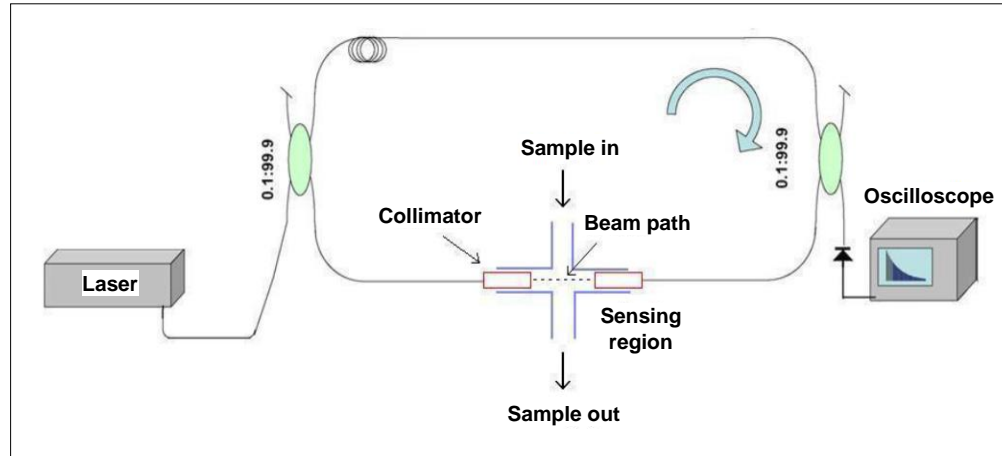
CONCLUSIONS and Future Activities

FLRD system was designed at 1535 nm and data were recorded.

A sensor region will be designed.

Different chemicals will be measured.

Gained knowledge and experience will be applied to visible region.



- Prof. Okan Esentürk, Prof. Hakan Altan, Dr. Halil Berberoğlu, Betül Cengiz, Ergün Kara
- Contact: danisman@metu.edu.tr
- Web: <http://curie.chem.metu.edu.tr/~fatihdanisman/>
- Funding: TÜBİTAK