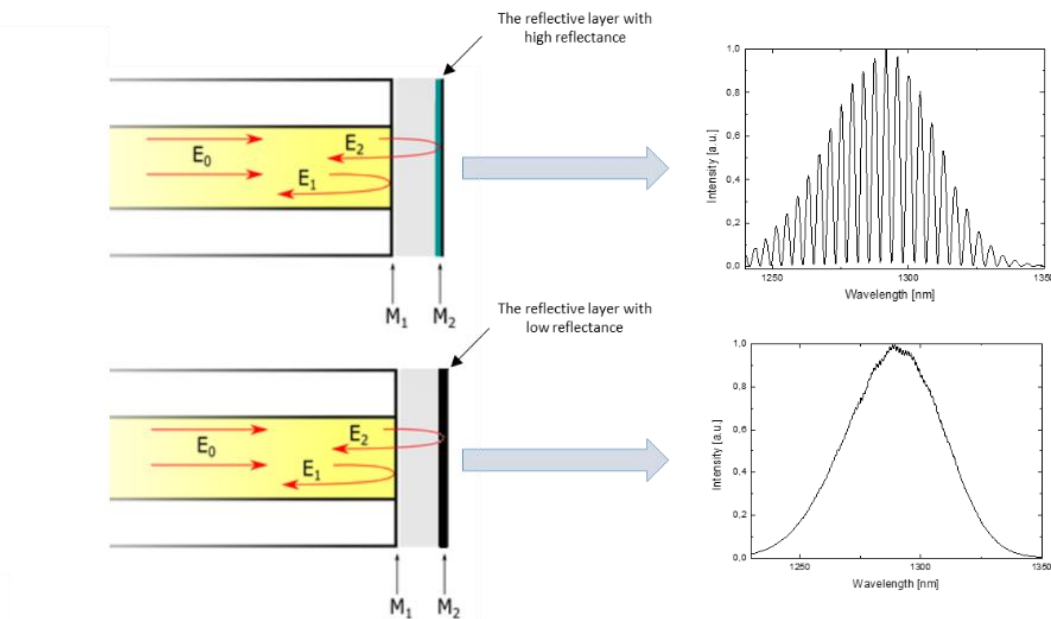


## Low-coherence sensors with active nanodiamond layers

Diamonds are appreciated for their aesthetic value. However, they have many applications due to their unique properties such as high mechanical strength. They are commonly used as a protection layer of processing elements. On the other hand, it is widely known that fibers are used for a high speed data transfer. They could be also used for creating small immune to electromagnetic interference sensors measuring physical properties such as: velocity, acceleration, temperature and biological/chemical properties i.e.: pH, drug concentration, hematocrit level.

During the project it will be checked whether the usage of diamond films in optic-fiber sensors increases metrological properties (e.g. increase sensitivity of measurement or visibility of signal), what is shown in the below picture.



**Figure 5. Extrinsic Fabry–Pérot interferometer working in reflective mode:  $M_1$ ,  $M_2$  — cavity mirrors,  $E_0$  — the amplitude of an electric vector of an incident wave;  $E_1$ ,  $E_2$  — the amplitude of an electric vector of wave reflected of the first and second mirrors, respectively.**

As for now this thesis is insufficiently examined which is reflected in the lack of scientific papers regarding this subject. Moreover, preliminary studies are very promising.