

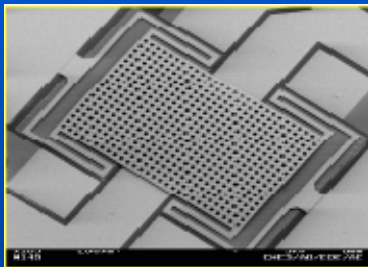


"Le micro e nanotecnologie per l'ambiente ed il territorio"



Cosa sono le Microtecnologie MEMS e MOEMS

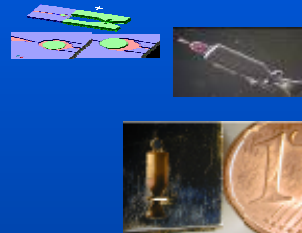
Le tecnologie di fabbricazione dei MEMS e/o dei MOEMS sono in gran parte le stesse messe a punto negli ultimi decenni per la microelettronica. Pertanto, le Tecnologie Abilitanti per la realizzazione di microsistemi sono comuni sia al settore elettromeccanico dei MEMS....



μ -Accelerometro

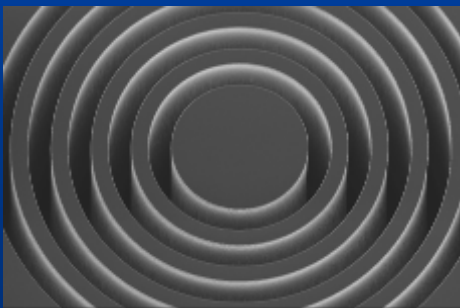


μ -Motore elettrico

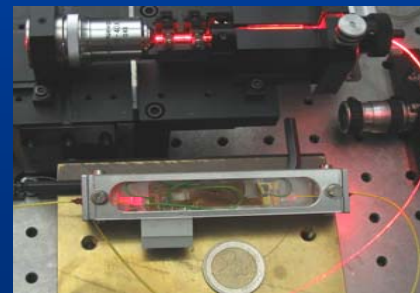


μ -Thruster

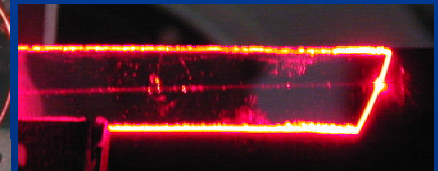
Sia al settore Elettro-ottico o Fotonico dei MOEMS.



Microrisonatore ottico



μ -Interferometro



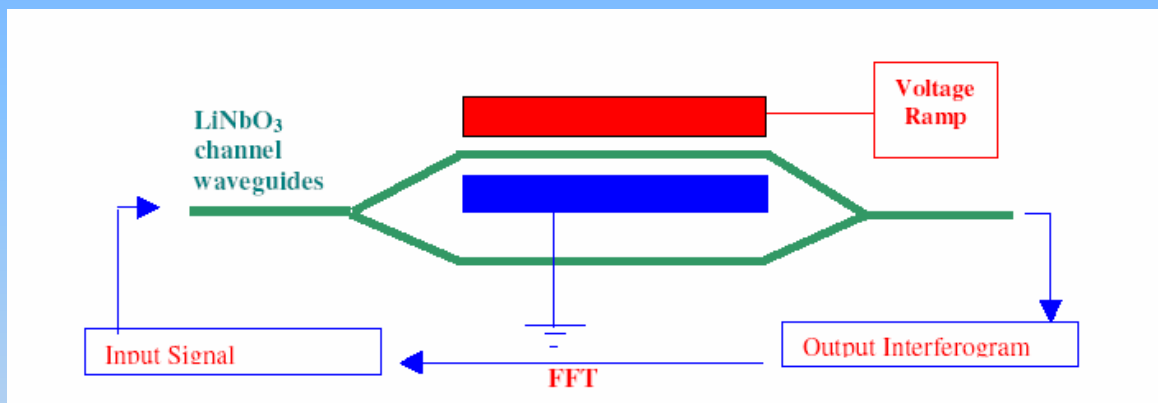
Guida ottica integrata



Caratteristiche peculiari dei microsistemi presentati

- **I denti degli ingranaggi hanno dimensioni confrontabili ai globuli rossi del sangue**
- **Gli ingranaggi sono mossi da forze elettrostatiche**
- **Data la piccola inerzia, questi motori possono ruotare a 500.000 giri/minuto**
- **Il record di durata è di 7 miliardi di giri, un motore delle nostre auto, per compiere lo stesso numero di giri, dovrebbe percorrere per 5 volte il viaggio Terra - Luna e ritorno.**

Schema di un Microinterferometro Integrato tipo Mach-Zehnder per Telerilevamento di Gas Atmosferici in Traccia Mediante Spettroscopia DOAS

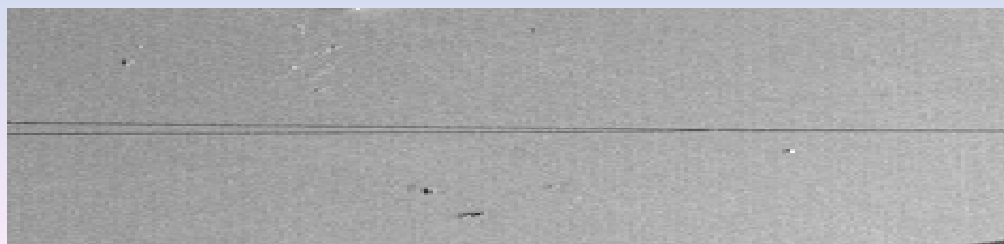


$$I_{out}^{tot} = \int I(\kappa) [1 + \cos(2\pi\Delta p(\kappa))] d\kappa$$

$$\Delta p = L \Delta n$$

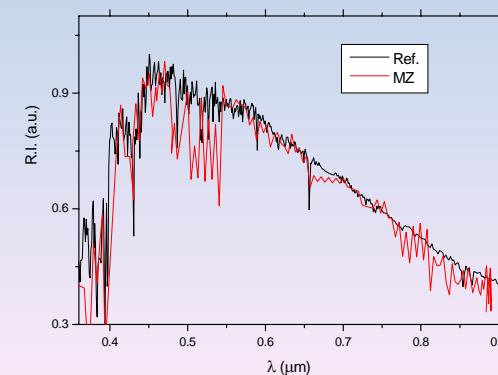
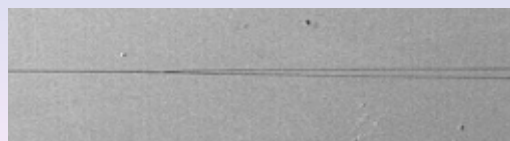
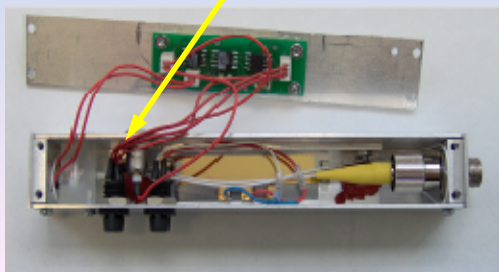
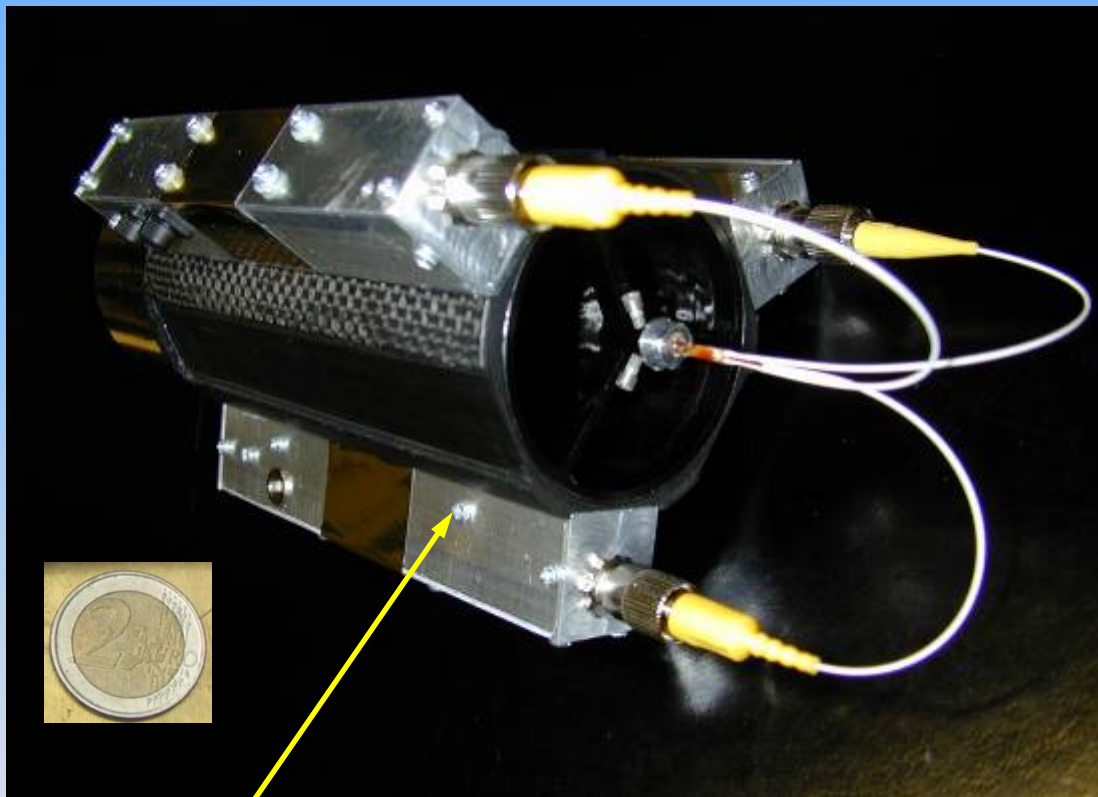
$$\Delta n = r_{33} \cdot n_c^3 \cdot E / 2$$

$$\Delta \lambda = 0.5 \cdot \lambda^2 / \Delta p$$





Microspettrometro a tre Canali nel Visibile e I.R. 450 gr incluso il telescopio e l'elettronica!

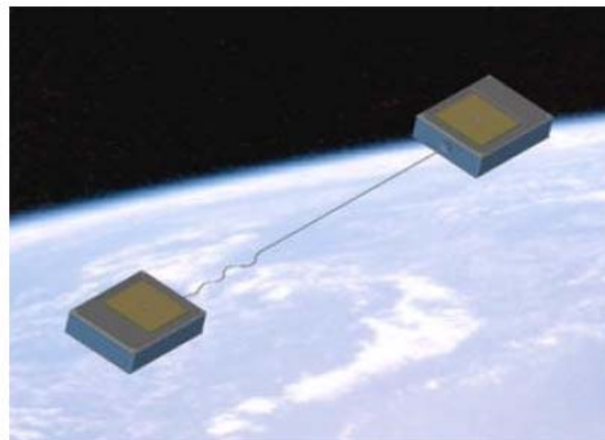




Micro e Sub-Micro Tecnologie per controllo Territorio, (Safety and Security)



Des picosatellites de moins de 250 grammes sont comparés à une tasse (The Aerospace Corp.)



Picosats

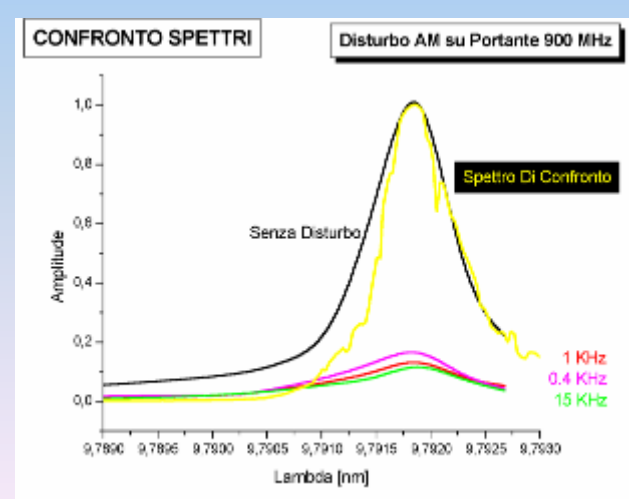
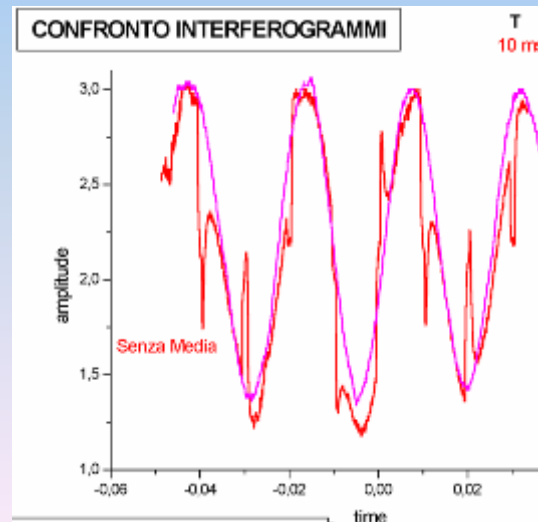
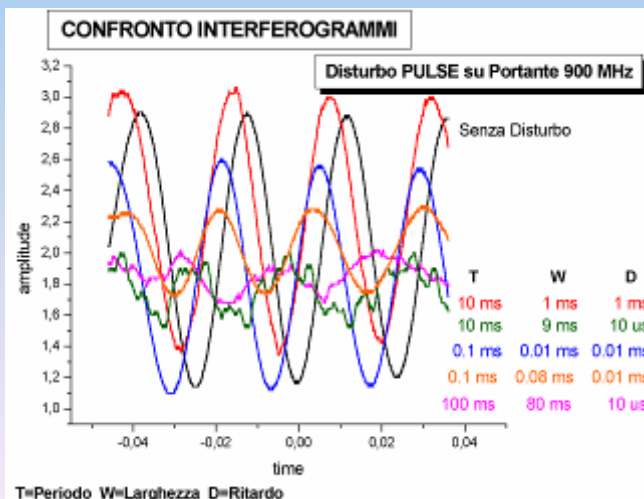
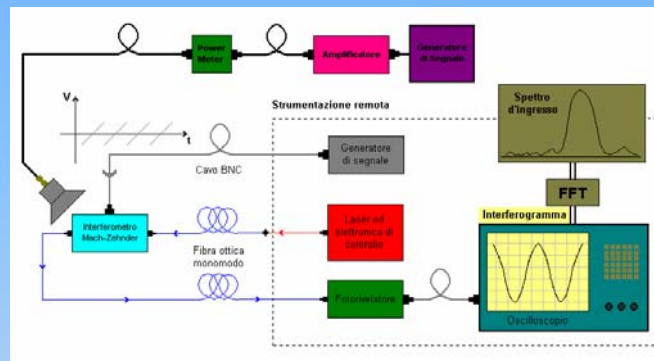
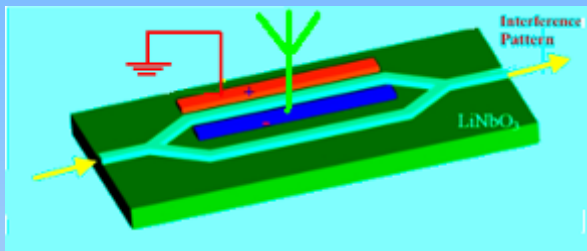


2.5 x 7.5 x 10 cm 250 gm

Pico Satellite (Aerospace Corp)

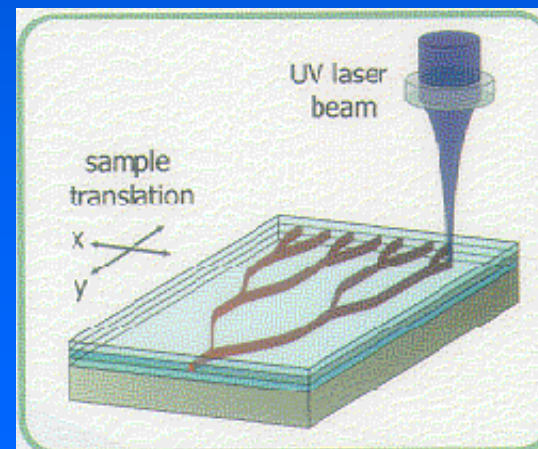
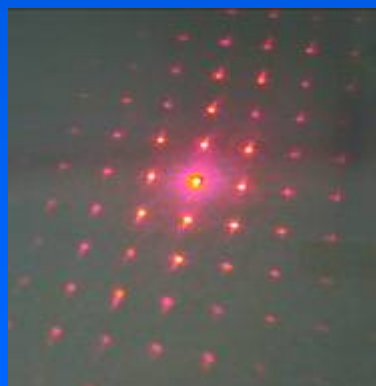
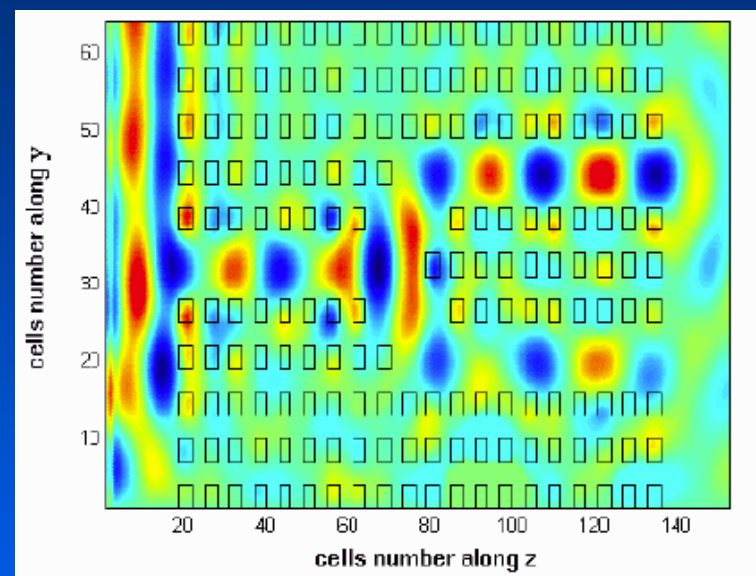


Interferometro Mach-Zehnder come Sensore Elettro-Magnetico per applicazioni legate alla "Security" del Territorio





Materiali Funzionalizzati: Strutture Submicro e Nanometriche

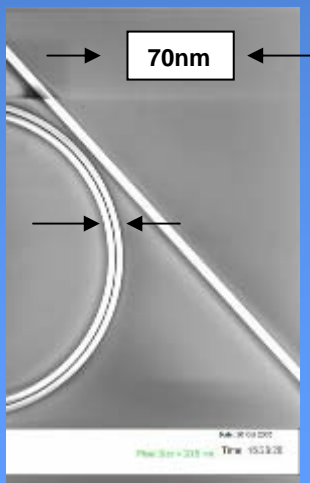




NANOTECNOLOGIE: Tecnologie Abilitanti per un Futuro Prossimo

The Council of the European Union:

RECOGNISES the important role and potential of nanosciences and nanotechnologies in many areas, such as health care, information technologies, materials sciences, manufacturing, instrumentation, energy, **environment**, **security and space**;.....



Nano-Risonatori ottici

Nano Materiali
Funzionalizzati:
Nanotubi di
Carbonio

