

# Nanostrutturazioni laser dei materiali per applicazioni tecnologiche

*Trasversalità delle Tecnologie Chiave Abilitanti - KETs (es. nanotecnologie, materiali avanzati, micro e nanoelettronica)*

Energia

Automotive

Biomedicale

Aerospazio

Ambiente

## Metodo

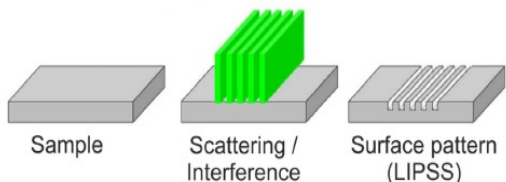
- Nanostrutturazioni laser tramite l'uso di laser ad impulsi ultracorti (120 fs)
- Caratterizzazione superfici nanostrutturate (SEM, XRD,  $\mu$ -Raman, XPS, spettroscopia UV-Vis-NIR, ecc.)
- Definizione proprietà funzionali dei materiali nanostrutturati e loro applicazioni

## Competenze acquisite

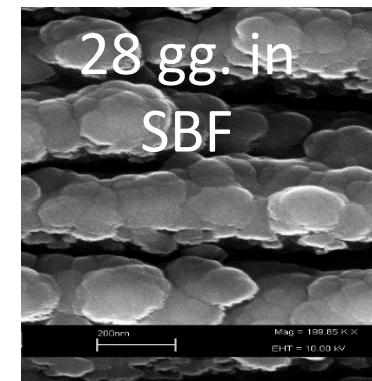
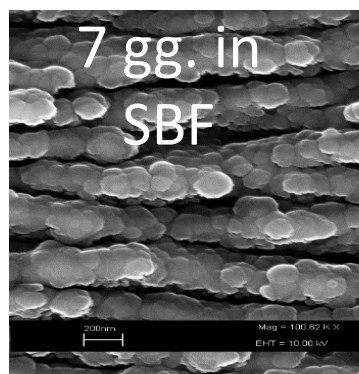
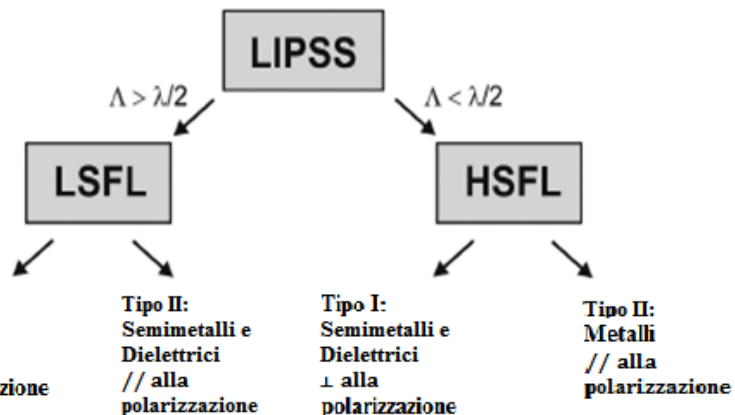
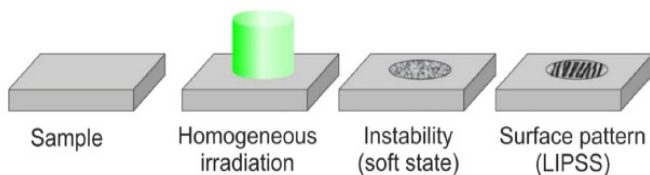
- Principi di funzionamento delle tecnologie laser ad impulsi ultracorti e meccanismo di interazione laser-materia
- Correlazione proprietà dei materiali con le caratterizzazioni chimico-fisiche
- Ottimizzazione dei processi di nanostrutturazione per la Scienza dei Materiali

## Nanostrutturazione Laser di Superfici di Titanio e loro Bioattività Funzionale - Tesi N. Caggiano (2022)

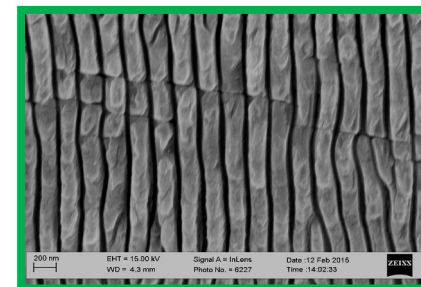
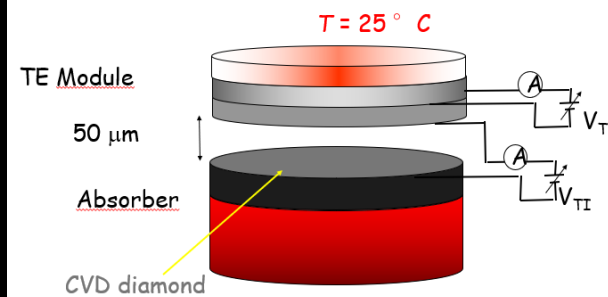
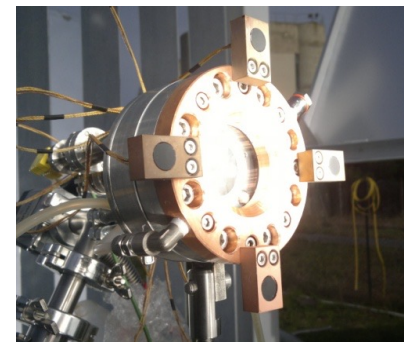
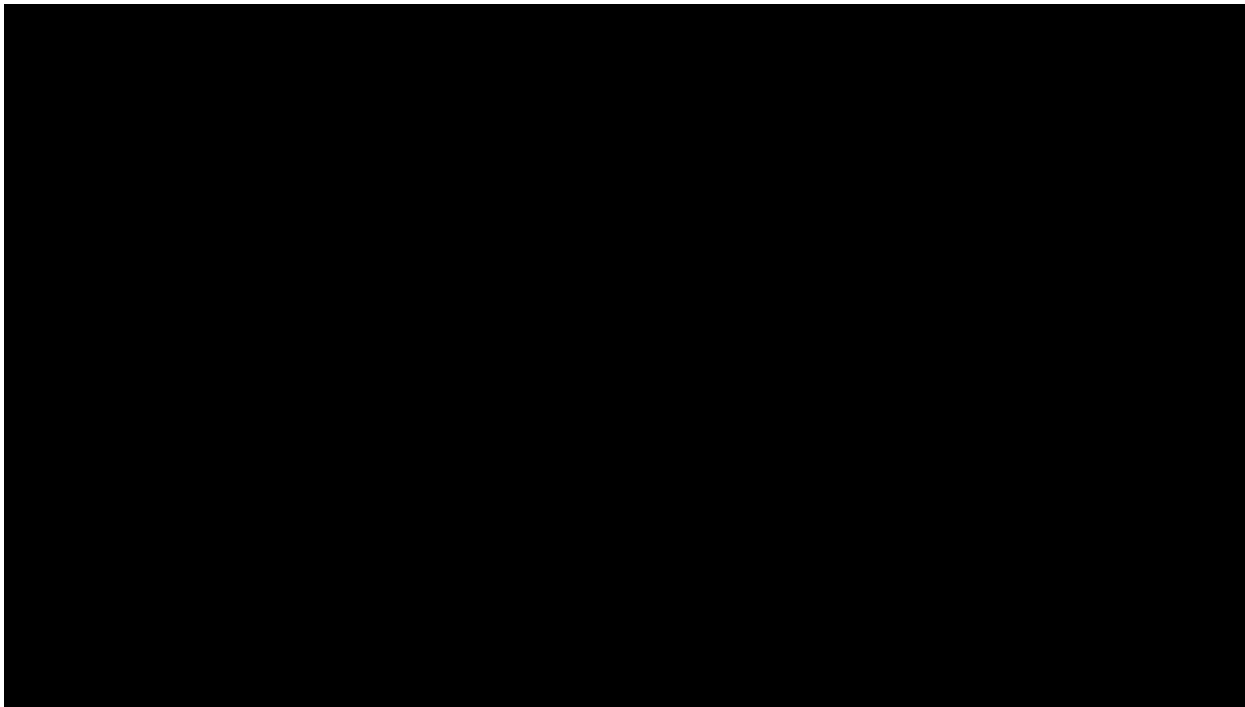
### Electromagnetic models

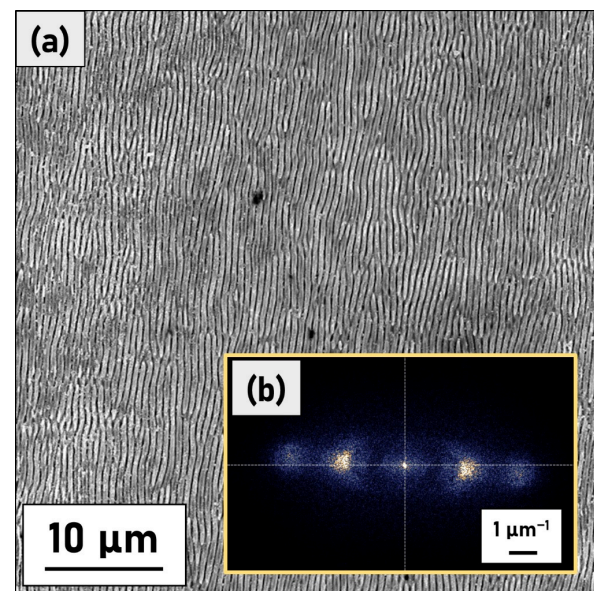
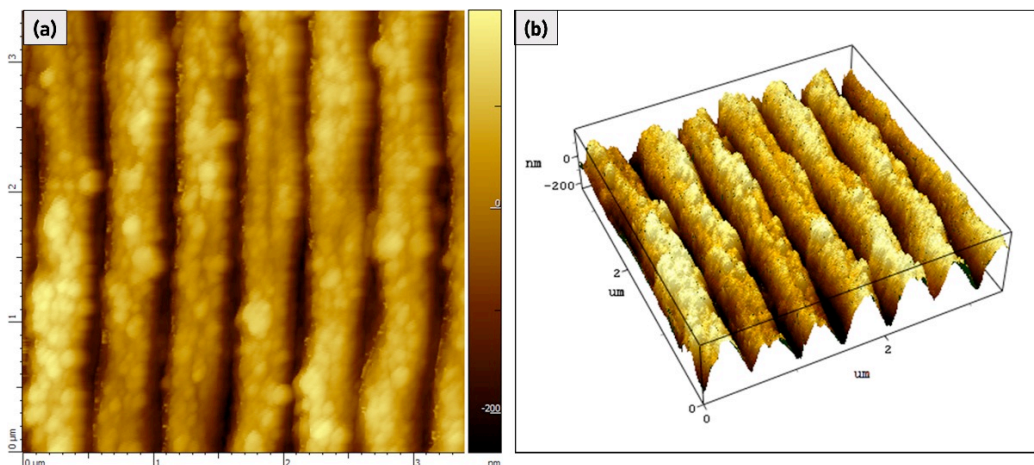
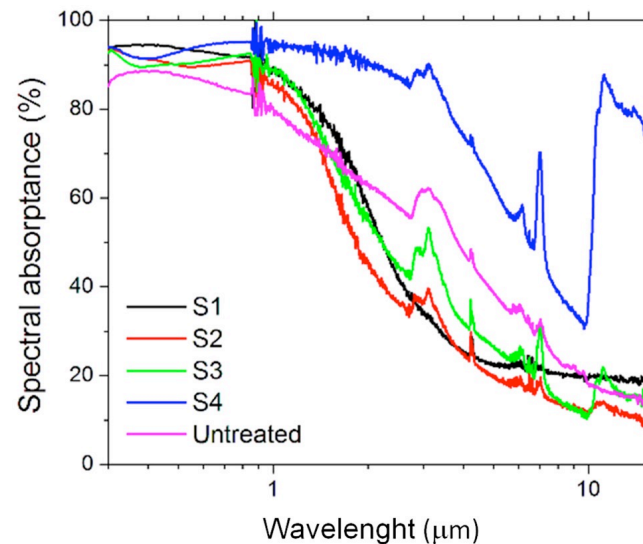
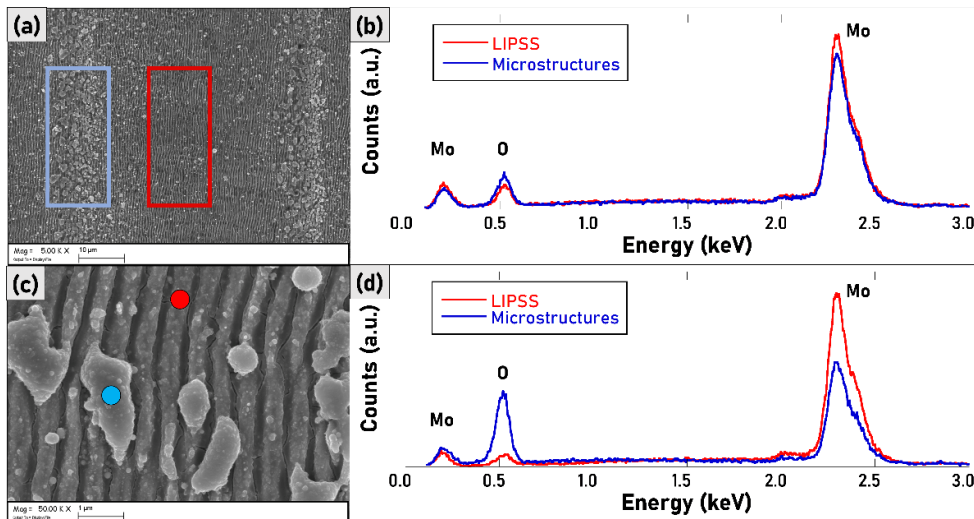


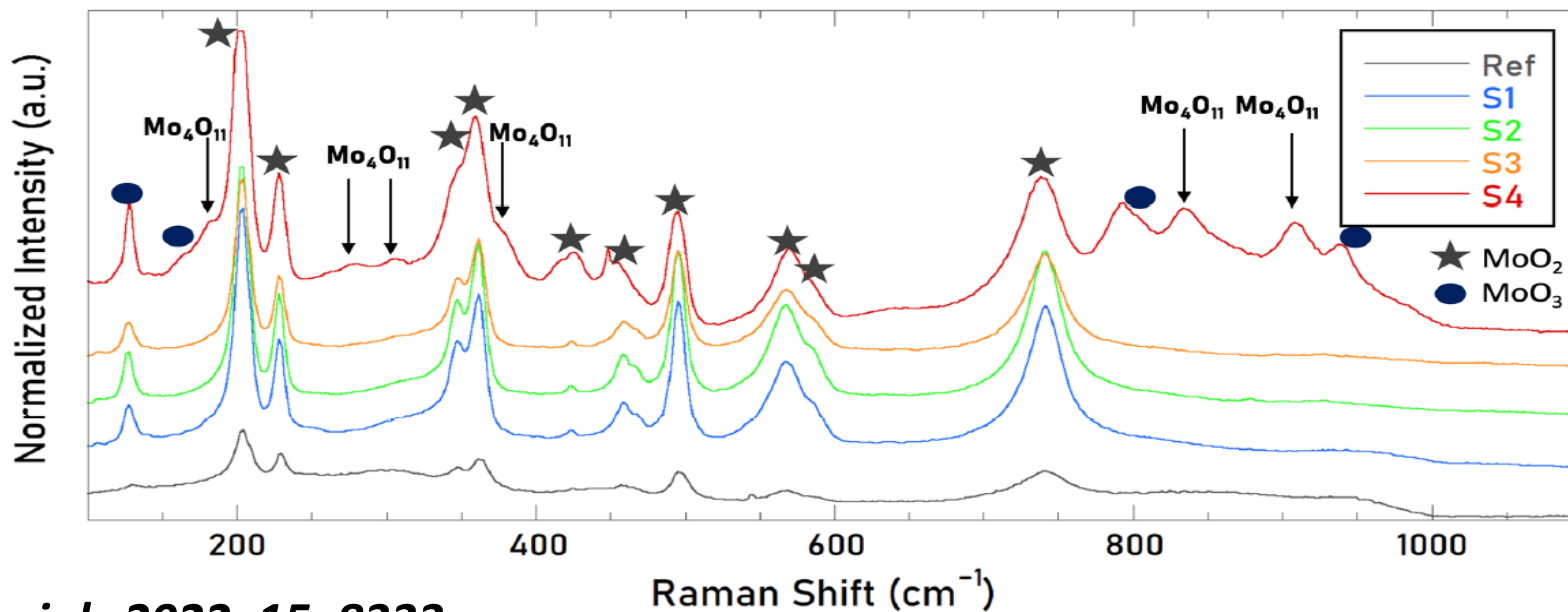
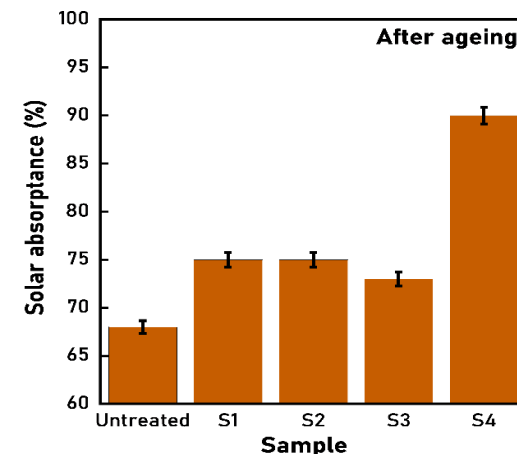
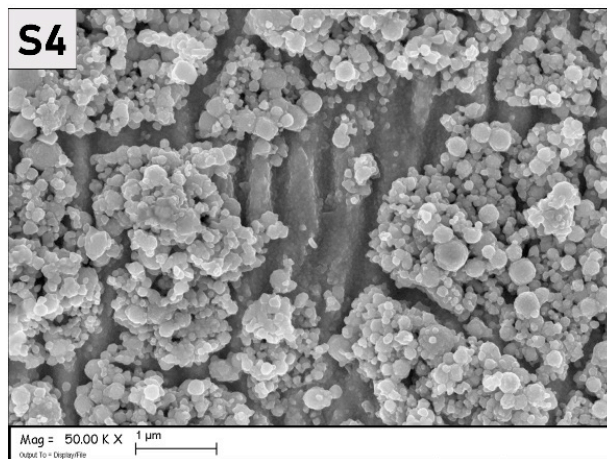
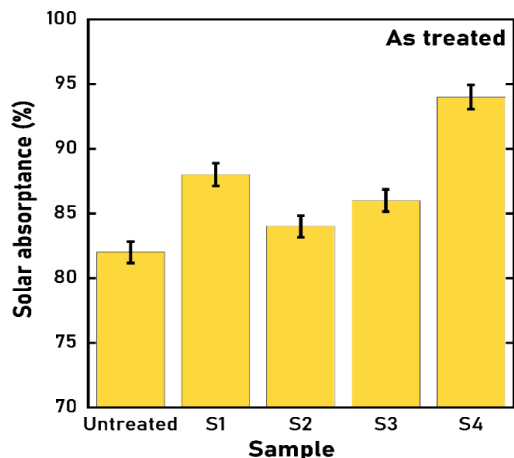
### Matter reorganization models



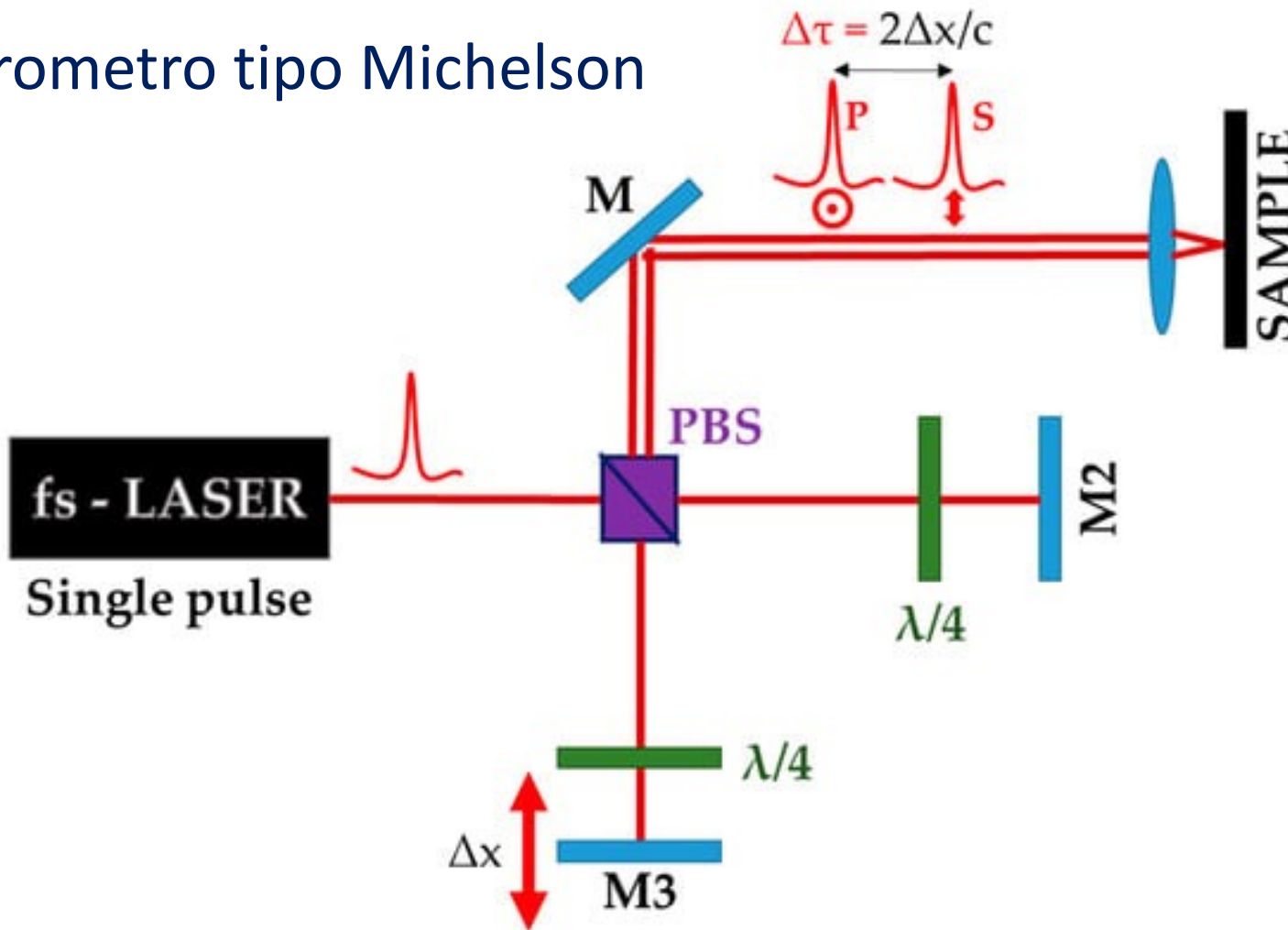
Ti 2p <sub>3/2</sub> (eV)	Assegnazione	Percentuale (%)
454,3	Ti (0)	6
456,8	Ti <sub>2</sub> O <sub>3</sub>	10
458,8	TiO <sub>2</sub>	84

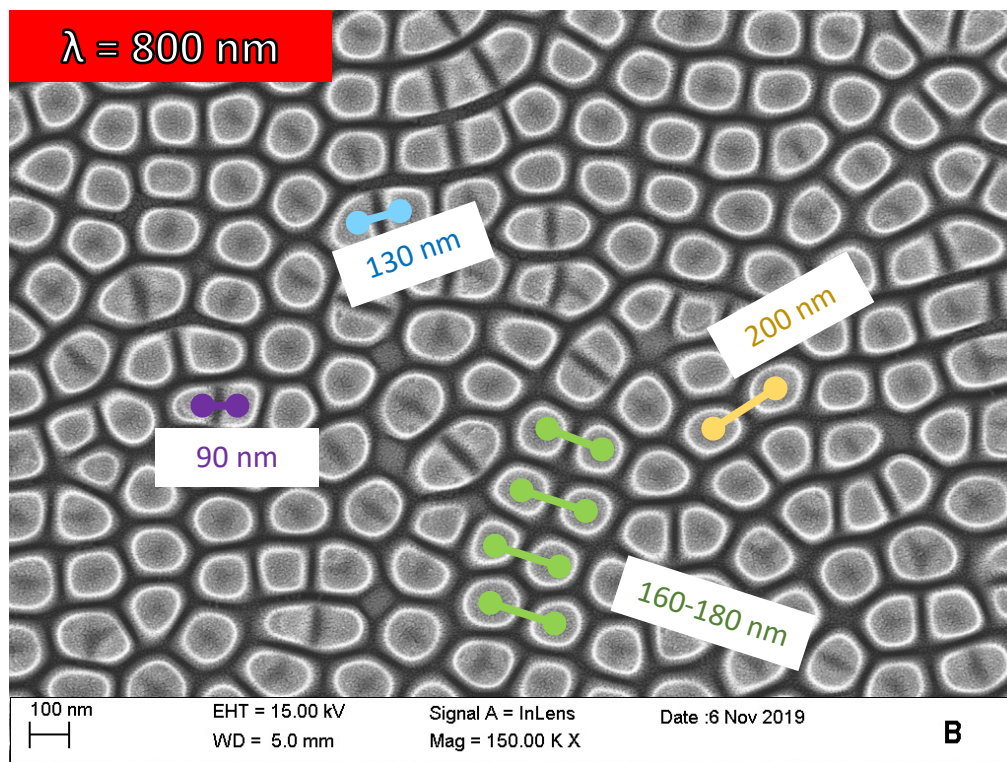
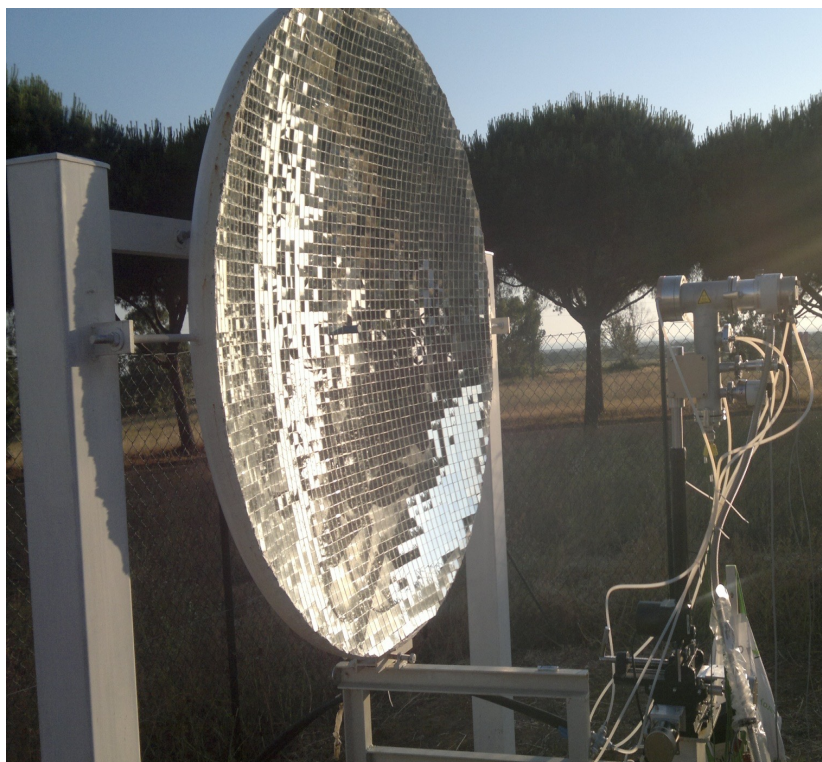
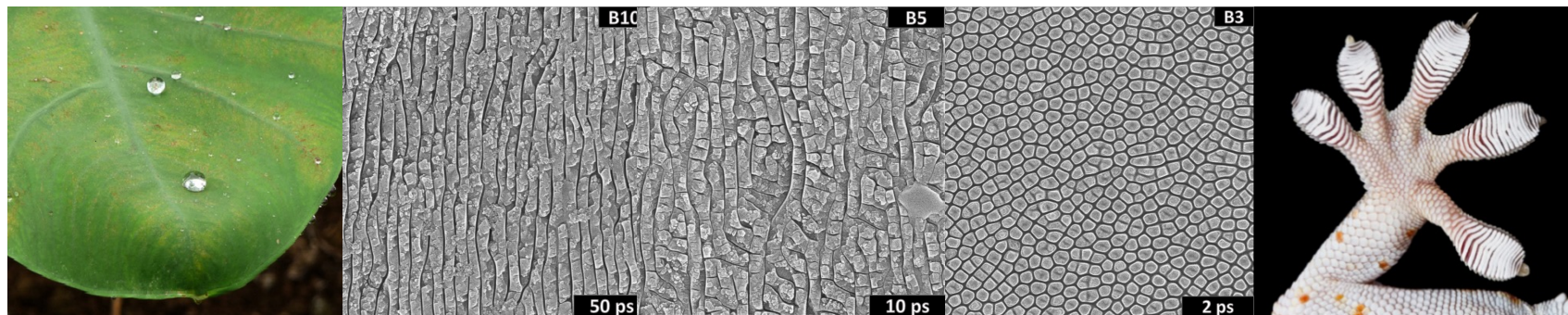






# Interferometro tipo Michelson





## Team di Ricerca

**UniBas:** Prof. R. Teghil, Prof.ssa A. De Bonis

**ISM-CNR:** Dott.ssa M.L. Pace, Dott. D.M. Trucchi\*, A. Bellucci\*

**Univ. Sapienza Roma:** Prof. S. Brutti



# Grazie per l'attenzione e Buone feste a tutti

**CNR-ISM**

Istituto di Struttura della Materia

[www.ism.cnr.it](http://www.ism.cnr.it)

Sede di Tito Scalo (PZ)

Area della Ricerca di Potenza

C.da S. Loja Zona Industriale