

# Fundamentals of Collisions of Fast Particles with Surfaces

LES HOUCHES PHYSICS SCHOOL, FRANCE

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SAVE THE DATE



## Objectives

The workshop aims to survey the state of the art of our knowledge in the physics and chemistry of high-speed particle collisions (5000 -15000 m/s, several eV energy) with solid surfaces, namely:

- surface accommodation and subsurface bond breaking and damage
- chemical abstraction, oxidation, etc.
- atom exchange reactions
- emission of radiation, absorption of radiation from the hot boundary layer and the reaction products and subsequent photo-chemistry
- reaction of the ablated elements with the boundary layer of the incoming fluid flow
- ionization and plasma formation

## Applications and industrial domains:

- Reentry heat shield design and manufacture
- Energetic material explosive decomposition
- Plasma Enhanced Chemical Vapour Deposition of semiconductors
- Erosion of electrodes and insulators in plasma thrusters
- Action of solar wind, Extreme Ultraviolet optics
- Divertor interactions in fusion machines.