UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Cold atmospheric plasma applications in life sciences

2425-1-113R-21

Title

Cold atmospheric plasma applications in life sciences

Teacher(s)

prof. Emilio Martines

Language

English

Short description

The use of cold plasma (ionized gas) produced at atmospheric pressure in the context of life sciences is a topic which is gaining momentum. Such plasma is a weakly ionized gases characterized by a hot electron population, capable of molecule dissociation and free radical formation, while ions and the dominant neutral gas component are at or near room temperature, ruling out thermal effects. The course describes the methods used to produce plasmas relevant to this topic, some basic concepts related to their physics and chemistry, and the interaction mechanisms with living matter. In particular, the role of reactive oxygen and nitrogen species (ROS/RNS) is discussed. Applications to medicine (disinfection, wound healing, cancer therapy), to agriculture and food industry (stimulation of seed germination and plant growth, pathogen inactivation) and to medical biotechnologies (air and

water sanitization, transfection, drug delivery) will be described.

CFU / Hours

1 CFU / 8 hours

Teaching period

June 2025

Sustainable Development Goals

ZERO HUNGER | GOOD HEALTH AND WELL-BEING | CLEAN WATER AND SANITATION | INDUSTRY, INNOVATION AND INFRASTRUCTURE