



POLITECNICO
MILANO 1863

DIPARTIMENTO DI ENERGIA



ERC-2014-CoG No. 647554
ENSURE



NanoLab Talk

Monday, 3rd september, 2018 – 11.00

Seminar Room 1° floor

Department of Energy – Cesnef (Building 19) via Ponzio 34/3 Milan
Politecnico di Milano

“Recent activities on laser-driven neutron sources at ILE, Osaka”

Hiroaki Nishimura

Institute of Laser Engineering, Osaka University and
Fukui University of Technology,

Abstract:

Advancement of high power laser technologies enables us to open a new horizon of neutron sources along with conventional ones based on accelerators and nuclear reactors. Various types of short-pulse, high-fluence neutron sources have been developed including laser-driven inertial fusion, nuclear reaction of low-Z matters with laser accelerated ions, photonuclear reactions in high-Z matters, and cluster-explosion nuclear fusion. These neutrons have a high potential for their use in a wide variety of applications for such as material science, medical science, non-destructive investigation, security, and neutron radiography. In the late 2015, a national project on compact neutron sources, called A-STEP has started in Japan aiming at innovative improvement of compact neutron sources based on both laser and accelerators dedicated for industrial applications.

In the talk, research back ground and recent progresses of laser-driven neutron sources will be discussed together with physics of efficient particle acceleration with a multi-ps laser pulse.

For further information: carlo.casari@polimi.it

About the speaker:

He was born in 1953 in Osaka. He was a professor of Institute of Laser Engineering (ILE), Osaka University, Japan since 2003. Now he moved to Fukui University of Technology. He received a Ph.D. in electrical engineering from Osaka University in 1983, and has been engaged in scientific researches of laser plasma physics and applications including laser-driven nuclear fusion, laser plasma diagnostics, and laser plasma radiations and applications for more than 30 years. He has authored over 290 journal papers, and won two major academic awards in laser plasma radiation sources from Japanese Society of Plasma Science and Nuclear Fusion Research. Quite recently he has started a new national project on compact neutron sources based on laser-particle acceleration. The project consists of three phases and they are in the 4th year of the first phase. He together with his research colleagues want to step forward to the 2nd stage by showing an outstanding achievement in their study.