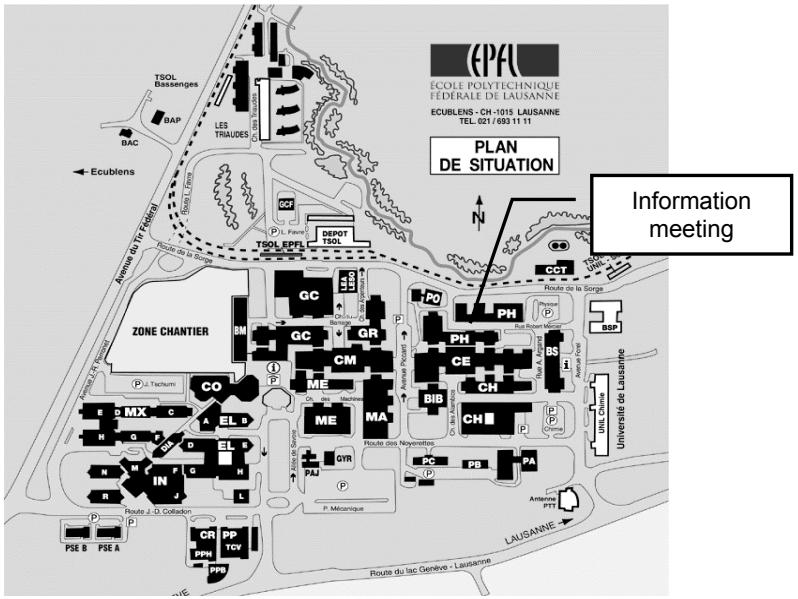
Map

How to find the EPFL:



by railway: HB, métro L-O, direction Lausanne City, change for TSOL, station EPFL (20 to 30 minutes)

by car: freeway, direction Lausanne South, drive EPFL

Internet: http://www.epfl.ch/plans/acces_epfl.html

The meeting will be held in the room

H33 of the Physics Department

reachable by the main entrance of the department, North-East part of the campus, second floor, red door.

SWISSMEM

WZMO
Werkzeugmaschinen
Machines-outils

Information Meeting

Carbon Nanotube Composites

11th October 2000

EPF Lausanne

Program

at 9:30 h	**Registration**	
	Basic properties of Carbon Nanotubes	
10:00 h - 10:40 h	Structure of carbon nanotubes (CN); production methods and purification; electronic properties, elastic moduli, thermal properties; main avenues of applications	Dr. L. Thien-Nga
	Composites: State of the art	
10:45 h - 11:25 h	Present materials: an overview Why to make carbon nanotubes? High-technology applications; polymer/CN, metal/CN composites; comparison with vapor grown carbon fiber (VGCF) and fiberglass composites	Dr. L. Forró
11:25 h - 11:45 h	*Coffee Break*	
	Requirements of the Industry	
11:45 h - 12:30 h	Participants from industry which present their requirements and needs	
12:30 h - 13:30 h	*Lunch Break*	
	Challenges	
13:30 h - 14:10 h	Ameliorate synthesis: up-scaling and graphitization; improved processing; load transfer and functionalization; alignment of CN in the matrix; local/global failure modes	Dr. R. Gaál
	CN/metal and CN/Polymer composites	
14:15 h - 14:30 h	Milestones of the feasibility study Short presentation of the TOP NANO 21 project	Dr. R. Schaller
14:30 h - 15:00 h	**Summary and discussion**	Dr. L. Forró
	Lab Tour	
15:00 h - 15:45 h	What is going on in the laboratories	Dr. R. Schaller
	Apéro	
15:45 h to 16:30 h	You will get the right answer from the experts	

Technical Background

Composites usually refer to the fiber-reinforced metal, polymer and ceramic materials. One very promising reinforcement discovered lately is carbon nanotubes. They show tremendeous potential as building blocks for new materials due to the very high degree of structural perfection of the carbon-carbon honeycomb network. They have high strength, light weight, excellent corrosion resistance, extraordinary flexibility and resilience. However, the degree of the graphitization of the nanotube walls, and its consequence on their mechanical properties, strongly depend on the preparation conditions, purity, defect density, etc. A further challenge is the elaboration of a good load transfer between the matrices (metal, polymer) and the carbon nanotubes.

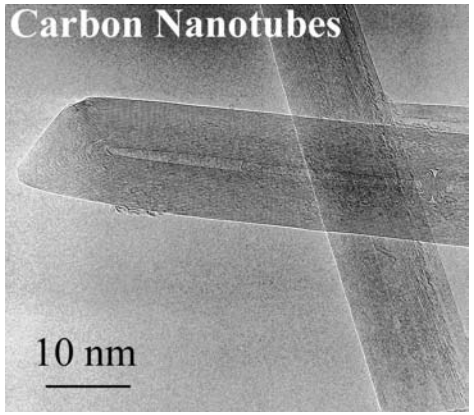


Figure 1:
High resolution electron microscopy image of multiwall carbon nanotubes (Source of photo: Dr. Thien-Nga Le, EPFL, DP/IGA)

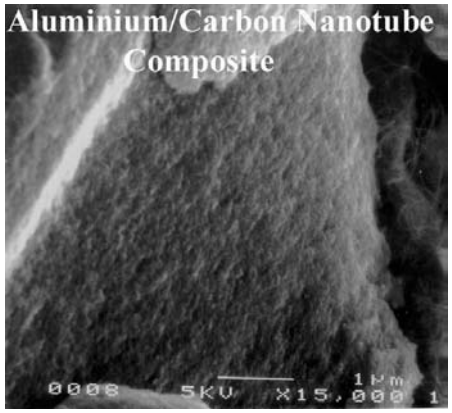


Figure 2:
Scanning electron microscopy image of aluminum/multivall carbon nanotubes composite (Source of photo: Dr. R. Schaller, EPFL, DP/IGA)

At the Physics Department of EPFL there is a focused research activity on carbon nanotubes, ranging from synthesis, trough basic physical properties to their application. Within a TOP NANO 21 feasibility study, the preparation and testing of carbon nanotube composites is foreseen. This information meeting is devoted to show the state of the art of carbon nanotube composites, the challenges, pit-falls, promises of these future strategic materials.