



**UNIVERSITÉ  
DE GENÈVE**

**INSTITUT DES SCIENCES  
DE L'ENVIRONNEMENT**

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**CYCLE DE FORMATION ÉNERGIE – ENVIRONNEMENT**

**SÉMINAIRE 2017-2018**

**« Enabling the energy turnaround by linking  
electricity, mobility and heat sector »**

**Urs CABALZAR**

*Empa*

**Jeudi 30 novembre 2017 à 17h.15**

**Salle B001 au rez-de-chaussée – Uni Carl Vogt**

66, bd Carl Vogt, 1205 Genève

*<http://www.unige.ch/energie/fr/contact/plan>*

*PROGRAMME DES PROCHAINES CONFÉRENCES :*

**Jeudi 14 décembre 2017 à 17h15**

*« Enjeux et challenges énergétiques de l'électro mobilité »*

Dominique BREUIL, EIGSI La Rochelle

## **L'orateur**

Urs Cabalzar is a mechanical engineer with a bachelor's degree from the Berner Fachhochschule in Burgdorf BFH and a masters from the Eidgenössische Technische Hochschule in Zürich ETHZ.

He is now the group leader in the Automotive Powertrain Technologies Laboratory at Empa, a group that focuses on production and refueling of gaseous synthetic fuels. Amongst other activities he is the project manager of the demonstration project move (Power-to-Gas demonstration plant of Empa).

## **La conférence**

With the increasing share of renewables in the electricity production sector – as stipulated in the Swiss Energy Strategy 2050 – the supplied power becomes subject to strong fluctuations particularly stemming from unsteady solar irradiance or wind speed. In order to be able to fit production and demand and avoid wasting electricity from renewable sources, storage technologies increasingly gain significance.

In parallel, to achieve a sustainable mobility, a drastic reduction in the use of fossil fuels and in current levels of CO<sub>2</sub> emissions is mandatory. Stricter legal requirements on newly registered cars require a reduction in CO<sub>2</sub> emissions of well over 50 % by 2025.

Linking the electricity, the mobility and the heat sector has the potential to provide a promising solution for the abovementioned challenges. In the course of the seminar the challenges accompanying the expansion of renewable energies will be examined. As an example of a possible solution Empa's Power-to-Gas plant 'move' is presented which was inaugurated in November 2015 and has been in operation since. The plant contains components for hydrogen generation via electrolysis (180 kW<sub>el</sub>), compression, storage as well as refueling. Currently the extension of the plant by a methanation unit is in planning which will allow the production of synthetic methane as well.

Further, the focus will lie on mobility and in particular on alternative fuels and powertrains. The current status of Fuel Cell Electric Vehicles (FCEV) and Natural Gas Vehicles (NGV) will be addressed including the respective refueling infrastructure in Switzerland.