

## Institute of Energy Technology – Professorship of Renewable Energy Carriers

### *Invitation to a Seminar*

**Date:** Nov. 24, 2016  
**Time:** 11:00- 12:00  
**Place:** ETH Zürich, ML-J25

**Speaker:** Prof. Alexandre K. da Silva, PhD  
Department of Mechanical Engineering  
Federal University of Santa Catarina  
Florianopolis, SC  
Brazil

### **Title: Complex Thermal Systems with Static and Self-Optimizing Behavior**

**Abstract** – Complex topological arrangements are one of the most striking phenotypical features found in natural systems. As they generate significantly lower entropic losses, these arrangements provide higher overall efficiencies. Additionally, natural systems present amazing self-regulating features, which allow them to change their operating characteristics depending on a number of factors (e.g., surrounding conditions). In this talk, we will explore the some theoretical and experimental developments addressing the use these features while focusing on thermal transport processes. The results to be shown quantify the impact of such topological features on the performance of thermal transport systems, e.g., the use of porous structures as thermal enhancers, while exploring their novel self-optimizing capabilities.

**Brief Biography** – Dr. da Silva is currently a Professor of Mech. Eng. at the Federal University of Santa Catarina (UFSC). He holds a BS (98') and a MSc (01') in Mech. Eng. from UFSC (Brazil), and a PhD (05') also in Mech. Eng. from Duke University (USA). Dr. da Silva was a Tenure-Track Assistant Professor of Mech. Eng. at the Univ. of Hawaii at Manoa (05'-07'), USA, and Tenure-Track Assistant Professor of Mech. Eng. at the Univ. of Texas at Austin (07'-13'), USA. His research interests are in the vast area of theoretical and experimental thermal transport systems. He has been funded by several agencies such NSF-CAREER (USA), DOE ARPA-E (USA), ARP-THECB (USA), Petrobras (Brazil), CNPq (Brazil), AEB (Brazil), CAPES (Brazil). Dr. da Silva has published over 50 peer-reviewed journal articles and served as a reviewer for numerous peer-reviewed periodicals.

