

23
2018

NOON TALK @ DIATI

**Mercoledì 11 aprile 2018
ore 13.00**

Politecnico di Torino
Sala Riunioni, primo piano,
DIATI ingresso 3

Matteo Fasano
RTD-A at DENERG

“Transport properties of nanoconfined water for energy and environmental applications”

Prof. **Eliodoro Chiavazzo** moderates the discussion

ABSTRACT

Countless scientific publications and patents have been pushing forward nanotechnologies for energy applications in the last decades; however, a better comprehension of their nanoscale physics is advancing at a slower rate, particularly when solid-liquid interfaces are involved. A better understanding of these phenomena is not just scientifically relevant, but it is also fundamental for decreasing the investment and time to market needed for developing novel devices based on such nanostructured materials. In this seminar, heat and mass transfer properties of water at solid-liquid interfaces are presented through a synergic use of atomistic simulations, experiments and theoretical considerations. First, atomistic simulations are used to perform extensive sensitivity analyses on the most important geometrical, chemical and physical parameters affecting the transport quantities under investigation (e.g. mass diffusivity, thermal transmittance). Second, experimental evidences are employed for validating numerical results and protocols. The resulting understanding of transport properties of nanoconfined water can be used to provide experimental guidelines for innovative technologies at the frontier of interdisciplinary energy research, namely enhanced heat transfer/storage, less energy intensive water desalination and nanomedicine.



**POLITECNICO
DI TORINO**

Dipartimento di Ingegneria
dell'Ambiente, del Territorio
e delle Infrastrutture



BIOGRAPHY

Matteo Fasano is a researcher (RTDa) at the Energy Department of Politecnico di Torino. He completed the Ph.D. in Energy Engineering at Politecnico di Torino in 2015. During the Ph.D., he was selected by Scuola Interpolitecnica di Dottorato to join the interdisciplinary doctoral school on nanotechnology. He was one-year research fellow at Houston Methodist Research Institute and visiting researcher at Massachusetts Institute of Technology; he also collaborated with scientists from Imperial College and University of Minnesota. In 2017, he was recognized as the “Young Researcher of the Year” in the energy field by ENI Award. Matteo is working at the multi-Scale ModeLing Laboratory (SMaLL), where he is involved in several European and national research projects dealing with multiscale simulations of nanostructured materials and colloidal nanosuspensions for energy applications. Furthermore, he is developing prototypes aimed to efficiently collect, store and utilize energy from renewable sources, and he participates in the activities of CleanWaterCenter@PoliTo. Matteo is a teaching assistant in M.Sc. courses on applied thermodynamics, heat transfer engineering, and advanced materials for energy conversion, storage and transport.

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Please bring
your own mug.
Coffee and tea
will be
provided
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Save the date for our next speaker-event, on **Tuesday April 24 2018**, at 13:00.