



HIGHLIGHTS

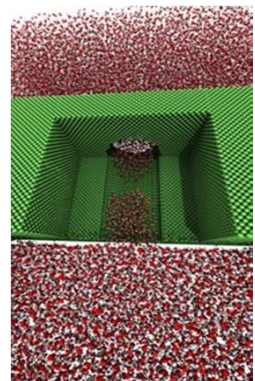
Financial Scouting

DIMA, according to the research areas of three Competence Centers of the Department, "*Space systems: small sat, space science and access to space*", "*Computational mechanics: high performance computing*", "*Integrated engineering: digital modelling and additive manufacturing*", has activated a Financial Scouting Service in order to select some opportunities presented in Horizon 2020 Program. Some announcements will be discussed in the first meeting of the Scientific Committees of Competence Centers, approved during the last Department Council. The aim is to promote **networking** among DIMA's research groups, in order to share competences on future projects and stimulate cooperation.

NEWS FROM DIMA



- ❑ **Additive Manufacturing** at DIMA: the first training course for the design and production of components in Additive Manufacturing was carried out as part of the DIMA "Grandi Attrezzature" project, with the installation of the machinery for the production of metal components with laser technologies. The course is aimed at young researchers, PhD candidates and students of DIMA, the Department of Physics and the Faculties of Medicine and Architecture. In the picture above, our Director with some participants and professors of the course.
- ❑ Proceedings of the National Academy of Sciences of the United States of America (PNAS) of prof. **Carlo Massimo Casciola research group** (abstract): heterogeneous systems composed of hydrophobic nanoporous materials and water are capable, depending on their characteristics, of efficiently dissipating (dampers) or storing ("molecular springs") energy. However, it is difficult to predict their properties based on macroscopic theories—classical capillarity for intrusion and classical nucleation theory (CNT) for extrusion—because of the peculiar behavior of water in extreme confinement. Here we use advanced molecular dynamics techniques to shed light on these nonclassical effects, which are often difficult to investigate directly via experiments, owing to the reduced dimensions of the pores. The string method in collective variables is used to simulate, without artifacts, the microscopic mechanism of water intrusion and extrusion in the pores, which are thermally activated, rare events. Simulations reveal three important nonclassical effects: the nucleation free-energy barriers are reduced eightfold compared with CNT, the intrusion pressure is increased due to nanoscale confinement, and the intrusion/extrusion hysteresis is practically suppressed for pores with diameters below 1.2 nm. The frequency and size dependence of hysteresis exposed by the present simulations explains several experimental results on nanoporous materials.



NEWS FROM DIMA



- **Presentation of DIMA Professional Master:** wednesday 6th December at 18:00 in the Cloister Hall of the Engineering Faculty. All Master Directors will participate also with some representatives of companies and organizations involved in DIMA various research fields. It will be a meeting opportunity between the Department and the world of institutions and industries, in line with collaborations already activated, considering their strong revival. At the end, an aperitif will greet the participants.



- On friday 1st December there will be a workshop on «**Space Debris Student Opportunities**» with a presentation of research activities of Sapienza University, University of Michigan, the Italian Space Agency and the European Space Agency. As visiting professor from University of Michigan, there will be professor **Patrick Seitzer** that will also hold a training course on «Space Debris and Space Surveillance» for DIMA students.



- On Wednesday 13th December at 20:30 it was organized a celebration for **Christmas** and the upcoming festivities dedicated to the entire community of the Department. The event will be attended by professors, researchers, post-doc researchers, doctoral students, DIMA students and other guests in a special location in Rome city center.



- As visiting professor at DIMA, until January 2018, there will be professor **Daniel Werner Meyer-Masseti**, senior scientist and senior lecturer at Institute of Fluid Dynamics of ETH in Zurich. He will hold 2 seminars: on 14th December at 12:00 «*Estimating Particle Densities in Statistics and Turbulent Flows with Distribution Element Trees*», and on 15th January at 12:00 «*Modeling Advective Spreading in Heterogeneous Subsurface Flows with Velocity Random Walks*», both in the Videoconference Room of the Engineering Faculty.



- On 27th November has been published in the journal "Qualenergia", bi-monthly of Legambiente, a focus on the potentials and perspectives of **Marine Renewable Energies** with particular attention to Italy and the Mediterranean area. This publication is related to OWEMES 2017 Conference proceedings (www.owemes-2017.eu), in which are involved representatives of the world of research, industries, environmental associations and institutions. OWEMES Association (www.owemes.org) has managed both Conference and the related publication. Actually OWEMES President is prof. Domenico Borello and General Secretariat is Silvia Sangiorgio of DIMA. Following this link it's possible to download the journal and the related publication on pages 87-106. http://lanuovaecologia.it/flp/qe/QualEnergia_5_2017/



SAPIENZA
UNIVERSITÀ DI ROMA

DIMA DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

Newsletter - December 2017



NEWS FROM DIMA



In the photo, Friday 1st December at the opening event of *Maker Faire 2017* in Rome, from the left side, DIMA Director, prof. **Paolo Gaudenzi**, with the Minister of Economic Development, **Carlo Calenda**, the President of Boeing Italia, **Antonio De Palmas**, and the Director of the Air Press Journal, **Paolo Messa**, at the panel discussion of the workshop entitled "*Innovazione al volo*".

Maker Faire is the most important event in the world of innovation. It's a showcase of invention, creativity, and resourcefulness. Maker Faire gathers together tech enthusiasts, crafters, educators, tinkerers, schools, universities, research institutes, artists, students, and corporations. Makers come to show their creations and share their learnings. Attendees flock to Maker Faire to glimpse the future and find the inspiration to become Makers themselves.

More information are available by following this link:
<http://www.makerfairerome.eu>

Sapienza Corse Racing Team at Bologna Motor Show 2017. «We're glad to announce that this year we'll be back at Motor Show in Bologna! After last year's preview, this time **Gajarda** will be there in the flash (or should we say in the carbon fiber), with the team ready to reveal all of its secrets... well, almost all of them».

For further information about the car and upcoming events click on the following link:

http://www.sapienzacorse.it/CartellaStampa/171120_presentation_Gajarda_AWD_MShow_17.pdf



OPPORTUNITIES FOR RESEARCH, NETWORKING AND INTERNATIONALIZATION



- **Clean Sky 2** is the largest European research program developing innovative, cutting-edge technology aimed at reducing CO₂, gas emissions and noise levels produced by aircraft. Funded by the EU's Horizon 2020 program, Clean Sky contributes to strengthening European aero-industry collaboration, global leadership and competitiveness. Actually there is a Call for partners with several topics, related to Airframe, Engines, Fast Rotorcraft, Large Passenger Aircraft, Regional Aircraft and Systems. For further information, please follow this link: <http://cleansky.eu/calls-for-proposals>



- The ESA Education Office is offering a new workshop entitled «**CubeSats Concurrent Engineering 2018**», in collaboration with ESA's System and Concurrent Engineering Section. University students can now apply for the workshop taking place from 16th to 19th January 2018 at ESA Academy's Training and Learning Centre in ESEC, Belgium. The Workshop will introduce University student teams from ESA Member and Associate States to the concurrent design of a CubeSat mission. For further information, follow this link: http://www.esa.int/Education/ESA_Academy/Application_form_Concurrent_Engineering_Workshop_2018



- In Rome, at the CNR (National Research Council of Italy) Convention Hall, on 12th december, there will be a panel discussion organized by APRE entitled «Towards FP9». While the 9th framework program adoption seems to be far to come, some ideas are already there and the relevant stakeholders are getting around intercepting signals which can allow predicting reliable scenarios for the next programming period. The general Brussels feeling, unless new schemes will appear, is that research in cooperation financed by the EU, as it is now structured, will be replaced by more flexible instruments, driven by profit and closer to market. For further information, please follow this link: <http://www.apre.it/en>



- EASME published a new call for proposals in support of clusters in the Defense and Security sector. The call aims to support European defense and security-related clusters and business network organizations to intensify collaboration across borders with other non-defense industrial clusters and to develop and implement joint strategies in areas of dual use technologies, products and services towards non-EU countries. The call, financed under COSME, is in line with the European Defense Action Plan. For further information, please follow this link: <https://ec.europa.eu/easme/en/cos-clusint-2017-03-6-clusters-go-international-defence-and-security-sector>

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