

REPORT DOCUMENTATION PAGE				<i>Form Approved</i> <i>OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY)		2. REPORT TYPE		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (include area code)

Office of Naval Research Global (ONRG) Final CSP (Collaborative Science Program) Report

Administrative Details:

Event Name: 9th International Conference on Multiphase Flows

Event Dates: May 22-27, 2016

Event City and Country: Florence, Italy

Grantee (Name and Contact Information): Università degli Studi di Udine (Tel +39 0432 556111, Fax +39 0432 507715, E-mail: amce@postacert.uniud.it)

Principal Investigator (Name and Contact Information): Alfredo Soldati (Tel +39 0432 558020, Fax +39 0432 558027, E-mail: soldati@uniud.it)

ONRG CSP Grant Number: N62909-16-1-2043

Date of the Final Report: August 12, 2016

Abstract:

This report summarizes the main activities and outcomes of the 9th International Conference on Multiphase Flow (ICMF-2016), which was hosted by the University of Udine and held at the Firenze Fiera Conference Center, Firenze (Italy) from May 22 to May 27, 2016.

Since 1991, the International Conference on Multiphase Flow (ICMF) is the largest international forum to present and discuss progress in research, development, standards, and applications of the topics related to multiphase flows.

Event Summary:

The number of participants who attended the conference was 1052 from more than 50 countries all over the world: This was the largest number of attendees in the history of ICMF, and reflects the growing interests on multiphase flow phenomena. The multi-disciplinary nature of ICMF2016 was attested by the technical programme, which featured 929 papers (858 oral presentations and 71 posters) distributed over 14 parallel sessions and covering the following scientific topics: Bio-fluids, bubbly flows, boiling, condensation and evaporation, cavitation and nucleation, collision, agglomeration and breakup, colloidal and suspension dynamics, computational techniques for multiphase flows, droplet flows, environmental and geophysical flows, experimental methods for multiphase flows, fiber suspension flows, finite size particles and droplets, fluidization, fluid-structure interactions, granular media, industrial applications, interfacial flows, instabilities, micro- and nano-scale multiphase flows, mixing, modelling of multiphase flows, multiphase flow in heat and mass transfer, non-Newtonian multiphase flows, particle, bubble and drop dynamics, particle-laden flows, reactive multiphase flows, turbulence in multiphase flows.

The programme of ICMF-2016 also included the Poster Competition (the three best posters were awarded with full reimbursement of the registration fee), 5 plenary lectures (given by Professors Christine Hrenya, Joseph Katz, Detlef Lohse, Kazuyasu Sugiyama and Stéphane Zaleski), 10 semi-plenary lectures (given by Professors Yutaka Abe, Dieter Bothe, Mickael Bourgoïn, Joseph Dufek, Ho-Young Kim, Dominique Legendre, Omar Matar, Giovanna Vittori, Evelyn Wang, and Roberto Zenit) and 2 ICMF Award lectures (given by Professor Said Elghobashi, recipient of the Senior Award, and Professor Olivier Desjardins, recipient of the Junior Award).

The conference welcomed delegates in the centuries-old park of the Conference Center on Sunday, May 22. The official opening ceremony of ICMF2016 was held in the Auditorium on Monday, May 23 at 8:30 am. Prof. Alfredo Soldati, the conference chair, delivered the opening address followed by congratulatory messages from Prof. Tomoji Takamasa, president of the Japan Society of Multiphase Flow, and Prof. Jacques Magnaudet, chairman of the ICMF Governing Board. The technical programme started on Monday at 9:00 am and ended on Friday, May 27 at 1:00 pm. Each day was opened by a plenary lecture, followed by parallel technical sessions in the morning, semi-plenary lectures followed by parallel technical sessions in the afternoon.

Fund Utilization:

The fund granted by ONRG (10,000 USD) was entirely used as partial co-funding of ICMF2016 premises rental. The total cost for renting the Firenze Fiera Conference Center premises (including: Palazzo degli Affari, main Auditorium, Sala Verde small auditorium, lunch area) from May 22, 2016 to May 27, 2016 was of about 95,000 USD.

Notable Outcomes:

ICMF2016 is the premier international conference for multiphase flows, and brought together researchers from many countries, disciplines and applications, facilitating the communication of new ideas and the initiation of new collaborations. This was achieved through a large number of contributed papers (858 oral presentations and 71 posters), distributed over 14 different scientific topics. All presentations have been gathered in the Proceedings of ICMF2016, which include both abstracts and full papers. Selection of high-quality contributions for a Special Issue publication is currently under way.

Lessons Learned:

Participants have been exposed to the most up-to-date research results, developments, standards, and applications related to general topics of interest such as simulation technology for multiphase flows, phase interaction models, turbulence model, solution algorithms, multi-scale modelling techniques, application of simulation methods to multiphase flow problems in industry and environment. experimental investigations of multiphase flows, measurement methods for multiphase flows.