

Consiglio Nazionale Delle Ricerche (CNR)
Short-Term Mobility Program for Scientists/Researcher
from Italian and Foreign Institutions – Year 2009

Scientific Report on Research Activity carried out

by

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CNR – ITIA Host: Dr. Lorenzo Molinari Tosatti

April 20, 2009

The growing trend toward miniaturization has impacted technologies in virtually every field, from medicine to manufacturing. Consequently, a dramatic shift is occurring within the manufacturing paradigm toward the development of complementary capabilities for producing miniaturized products. This shift has led to research efforts on multiscale (micro/meso) levels, bridging the gap between the micro and macro worlds and addressing the limitations of the MEMS and lithographic technologies. With the support of the 2009 CNR Short-Term Mobility (STM) Program, Dr. Wiens spent two weeks working with colleagues at CNR – ITIA toward establishing a formal long-term international research collaboration with CNR – ITIA and the University of Florida. This effort builds upon prior people exchanges: Fall 1999, University of Florida visit by Irene Fassi as a visiting doctoral student with CNR support, and Fall 2007 CNR – ITIA visit by Jessica Bronson as a post-doctorate student for whom Dr. Wiens was her PhD advisor.

In February 2009, Gloria Wiens was in resident at CNR – ITIA for the two week STM supported visit. During that time, Dr. Wiens engaged in dialogue with ITIA colleagues and their colleagues from Tecnico di Milano including a visit to the Tecnico di Milano's laboratories. A large portion of the STM visit focus was on building a European-USA collaborative research team in preparation for proposal submission to the Marie Curie FP7-PEOPLE-2009-IRSES program. In order to meet the International Research Staff Exchange Scheme (IRSES) proposal's requirement that the research team have a minimal of two European countries and two European institutions represented, Dr. Wiens and two CNR – ITIA research personnel had a one-day meeting with FEMTO-ST of Universite De Franche-Comte in Besancon, France for the purpose of touring their facilities and engaging in discussions on possible research collaborations. These STM activities have resulted in the following two proposal submissions with a USA international component.

- 1) "PKMs in Micro-Factory: Design and Manufacturing" submitted February 2009. Funding Agency: Ministero Dell'Istruzioni Dell 'Università e Della Ricerca. Amount: €1,936,946 for 48 month duration. Project Lead: CNR – ITIA (in review)
- 2) "Development of a Collaborative Network for Micro-Manipulation, Manufacturing and Robotics", submitted March 27, 2009. Funding Agency: Marie Curie Actions International Research Staff Exchange Scheme under program FP7-PEOPLE-2009-IRSES. Amount: €194,400 for 48 month duration for 219 months seconded researcher to be exchanged (60 months from CNR-ITIA, 48 months from FEMTO-ST of Universite De Franche-Comte in Besancon France and 111 from USA institutions: UF, UTA and UNR). Project Lead: CNR – ITIA (in review)

In addition, research projects were formulated with CNR – ITIA researchers and Dr. Wiens in the area of active fixturing for addressing challenges in micro/mesoscale manufacturing for creation of micron features on micro and macro parts. Utilizing the collective strengths of the CNR – ITIA and UF research team, the research focuses on critical issues impeding the integration and autonomous operation of mesoscale machine tools (mMTs). This collaborative research should lead to a refereed conference and/or journal paper in the near future.

Exact Dates of STM Sponsored Visit:

Date of Arrival: 8:30 am, February 9, 2009 Date of Departure: 9:25am, February 21, 2009

Length of Time spent at CNR – ITIA:

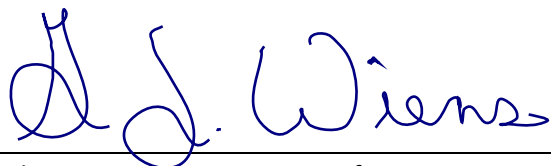
10 working days (including 1 day CNR – ITIA visit to FEMTO-ST with CNR – ITIA research staff)
Total of 11 days in Italy.

Location: Istituto di Tecnologie Industriali e Automazione (CNR – ITIA), Milano, Italy

Statements of commitment:

By the undersigned, I commit to quote CNR in any scientific reports or publications that may derive from the research activity that has been carried out under the CNR-STM 2009 Program.

I agree to the publication of relevant scientific reports on the CNR website.



20 April 2009

Gloria J. Wiens, Associate Professor

Department of Mechanical and Aerospace Engineering