Politecnico di Milano

PhD in
Materials Engineering

Research Title: New materials for wafer bonding in innovative MEMS - Studio di materiali innovativi per il processo di bonding in MEMS di nuova generazione

Scholarships and Financial support	
Monthly net income of PhD scholarship (max 36 months)	€. *1300*
Number of scholarships	1
Beginning of PhD	01/11/2016
Deadline for application	05/09/2016
Context of the research activity	
Motivations and objectives of the research in this field	Synthesis of bonding materials is of great interest for next generation of MEMS. Objective of the PhD will be the identification of new materials and alloys for the wafer bonding process. Such materials should be suitable for large scale application and easily integrated into existing production lines for MEMS. Main objectives of the research are: (i) development of deposition processes for depositing bonding materials (ii) optimization of post treatment for achieving best performances (iii) definition of structure-properties correlations.
Methods and techniques that will be developed and used to carry out the research	Bonding materials will be initially deposited by wet metallization processes according to the nature of the material. Morphological, chemical, mechanical and thermal characterization will be performed on lab and pilot scale samples.
Educational objectives	Main objective is to give to the student tools to: (i) design and prepare formulation of wet metallization solutions for bonding materials; (ii) design and prepare

	materials by electroplating (iii) characterize materials in term of mechanical and structural properties.
Job opportunities	Job opportunities for the Research Doctor will be in private and public companies and institutes active in the field of MEMS, surface treatments and coatings, as suppliers or end users. Research Doctor from previous Cycle was hired by Solvay Specialty Polymers
Composition of the research group	Number of Full Professors 0 Number of Associated Professors 2 Number of Assistant Professors 0 Number of Post-Docs 1 Number of PhD students 6 Number of contracted researchers 3
Names of the research directors	*Prof. Luca Magagnin*
E-mail address, phone number and web-page	*luca.magagnin@polimi.it – ph. +39 0223993124* *http://www.chem.polimi.it/*
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1. ST Microelectronics
Additional support	
Housing: financial aid per PhD student per year (gross amount)	*No*
Funding for educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): funding per PhD student per year	*1st year: € 0 euros per student* *2nd year: € 1370 euros per student* *3rd year: € 1370 euros per student*
Teaching assistantship: availability of funding in recognition of support to teaching activities by the PhD student	There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.
Computer availability:	1st year: *individual use* 2nd year: *individual use* 3rd year: *individual use*
Desk availability:	1st year: *individual use* 2nd year: *individual use* 3rd year: *individual use*