

# PhD In Information Technology

## Research Area n. 2 - Title Electronics

### Research Title: Printed Electronics

| <b>Scholarships and Financial support</b>  |  |
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| Monthly net income of PhD scholarship (max 36 months)                            | €. 1200<br>(In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)  |
| Number of scholarships   | 1  |
| Beginning of PhD   | 1/5/2017   |
| Deadline for application   | 13/03/2017   |
| <b>Context of the research activity</b>  |  |
| Motivations and objectives of the research in this field                         | Printed Electronics is an emerging field, aiming at fabricating large-area, flexible and lightweight circuits by means of scalable printing techniques.<br>In this context, solution-processable organic semiconductors are one of the most promising options, since they easily lend themselves to printing techniques. A PhD in this area will tackle both the challenges of developing new high performance printed devices, and of attaining a deep understanding of the device physics to boost the development of the field. |
| Methods and techniques that will be developed and used to carry out the research | The experimental activities will be performed within the "Printed and Molecular Electronics" group, in the Milan Center of the Istituto Italiano di Tecnologia. The study will require the development of printed high-performance electronic devices, mainly transistors, solar cells, photodetectors and other sensors. The device study will particularly focus on charge transport.  |
| Educational objectives   | A solid knowledge of printing techniques for the patterning of functional materials will be developed, along with a deep insight in device physics.  |

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| Job opportunities   | Printed Electronics is a worldwide expanding field, with several growing opportunities worldwide, particularly in EU and also in Italy. Careers in academia, in printed electronics industry, industrial R&D and consulting are possible.  |
| Composition of the research group   | DEIB Organic Device Laboratory: Prof. Dario Natali, Prof. Marco Sampietro and 1Ph.D. student<br><br>In collaboration with the Printed and Molecular Electronics (PME) group at IIT: <a href="https://www.iit.it/lines/printed-and-molecular-electronics">https://www.iit.it/lines/printed-and-molecular-electronics</a><br>Number of Post-Docs 5; Number of PhD students 7 |
| Names of the research directors   | Prof. Dario Natali<br><br>Head of PME group at IIT: <i>Mario Caironi</i>   |
| E-mail address, phone number and web-page   | dario.natali@polimi.it<br>0039 02 2399 3766<br><br><a href="mailto:Mario.caironi@iit.it">Mario.caironi@iit.it</a> , tel. 0039 02 2399 9875;<br><a href="https://www.iit.it/people/mario-caironi">https://www.iit.it/people/mario-caironi</a>   |
| List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research  | <ol style="list-style-type: none"> <li>1. University of Groningen – The Netherlands</li> <li>2. Dongguk University – Seoul – Korea</li> <li>3. Polyera Corporation – Skokie – Chicago – US</li> <li>4. University of Freiburg – Freiburg – Germany</li> </ol>  |
| <b>Additional support</b>   |  |
| <u>Funding for educational activities</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): funding per PhD student per year | 2 <sup>nd</sup> year: euros per student (min € 1370)<br>3 <sup>rd</sup> year: euros per student (min € 1370)   |
| <u>Teaching assistantship:</u> 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.<br>The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.  |
| <u>Computer availability:</u>   | 1 <sup>st</sup> year: individual use<br>2 <sup>nd</sup> year: individual use<br>3 <sup>rd</sup> year: individual use   |
| <u>Desk availability:</u>   | 1 <sup>st</sup> year: individual use (possibly share used in the first couple of months)<br>2 <sup>nd</sup> year: individual use<br>3 <sup>rd</sup> year: individual use   |