By Prof Roberto Cingolani
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Nanotechnologies for Humans and Humanoids

Humanoids will soon co-exist with humans, helping us at home and at work, assisting elder people, replacing us in dangerous environments and somewhat adding to our personal communication devices the capability to actuate motion. In order humanoids to be compatible with our everyday tools and our lifestyle it is however mandatory to reproduce (at least partially) the body mind nexus that makes humans so superior to machines. This requires a totally new approach to humanoid technologies, combining new responsive and soft materials, bioinspired sensors, high efficiency power sources and cognition/intelligence of low computational cost. In other words an unprecedented merge of nanotechnology, cognition and mechatronics.

The presentation will address the multidisciplinary approach developed by IIT to face such a challenge, also giving a few selected examples of disruptive applications in the field of health, prosthetics, biodegradable materials, human-machine interactions.

About Prof Roberto Cingolani

Roberto Cingolani (Milan, 1961) graduated in Physics and got the “Diploma di Perfezionamento” (PhD) in Physics at Scuola Normale Superiore in Pisa. Founder and Director of the National Nanotechnology Laboratory (NNL) of INFMI Lecce, he is the Scientific Director of the Fondazione Istituto Italiano di Tecnologia, Genova (Italy), since 2005. He was staff member at the Max Planck Institut für Festkörperforschung in Stuttgart (Germany) and Visiting Professor at the Institute of Industrial Sciences at Tokyo University (Japan) and at Virginia Commonwealth University (USA).

Author and co-author of about 1,000 publications, he holds 48 patent families. During the years he has been in charge of various institutional roles at national and international levels. Among Prof. Cingolani’s awards and honors are: two Prizes of the Italian Physical Society for young researchers, the INFMI Prize “Ugo Campisano” for researchers in the field of Semiconductor Physics, the “ST-Microelectronics” Prize by the Italian Physical Society, the “Premio Grande Ippocrate” award for science dissemination by Unamsi and Novartis, the “Guido Dorso” award by the Italian Republic Senate for his Research Activity, the title of “Alfiere del Lavoro” and the title of “Commendatore della Repubblica” by the President of the Italian Republic.