



#investinitaly

The Perfect Platform for
Nanotechnologies and R&D

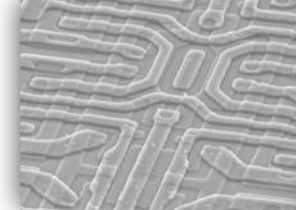
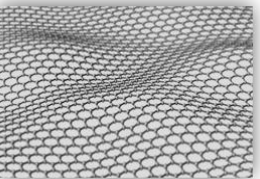
March, 2019



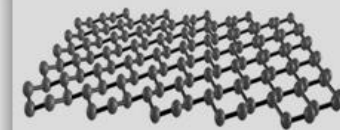
ITA
ITALIAN TRADE AGENCY
ICE - Agenzia per le promozioni all'estero
l'Internazionalizzazione delle imprese italiane

INVITALIA

Agenda



INVEST
IN ITALY



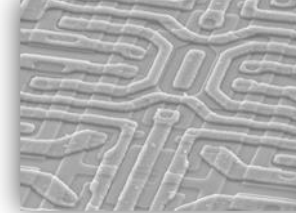
1. Country overview

2. Industry overview

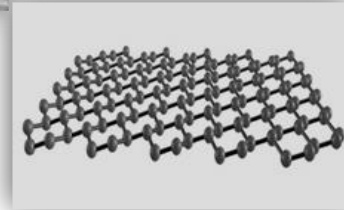
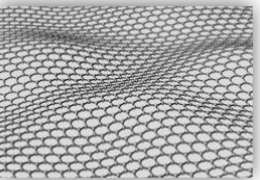




KEY FACTS



INVEST
IN ITALY



3rd largest economy in the Eurozone

Italy is open to **Technology** and 4.0 **manufacturing**

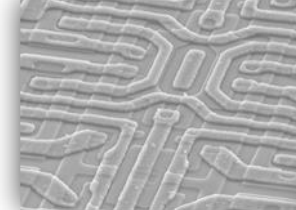
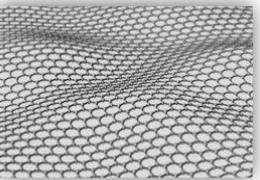
Italy has a large & skilled **workforce**

Italy has among the lowest **labour costs** in Western Europe

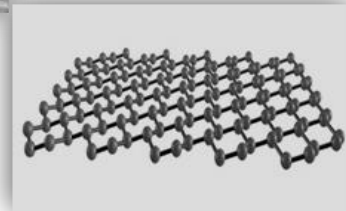


Competitive location for investment. Cheaper than USA and many Western European competitors

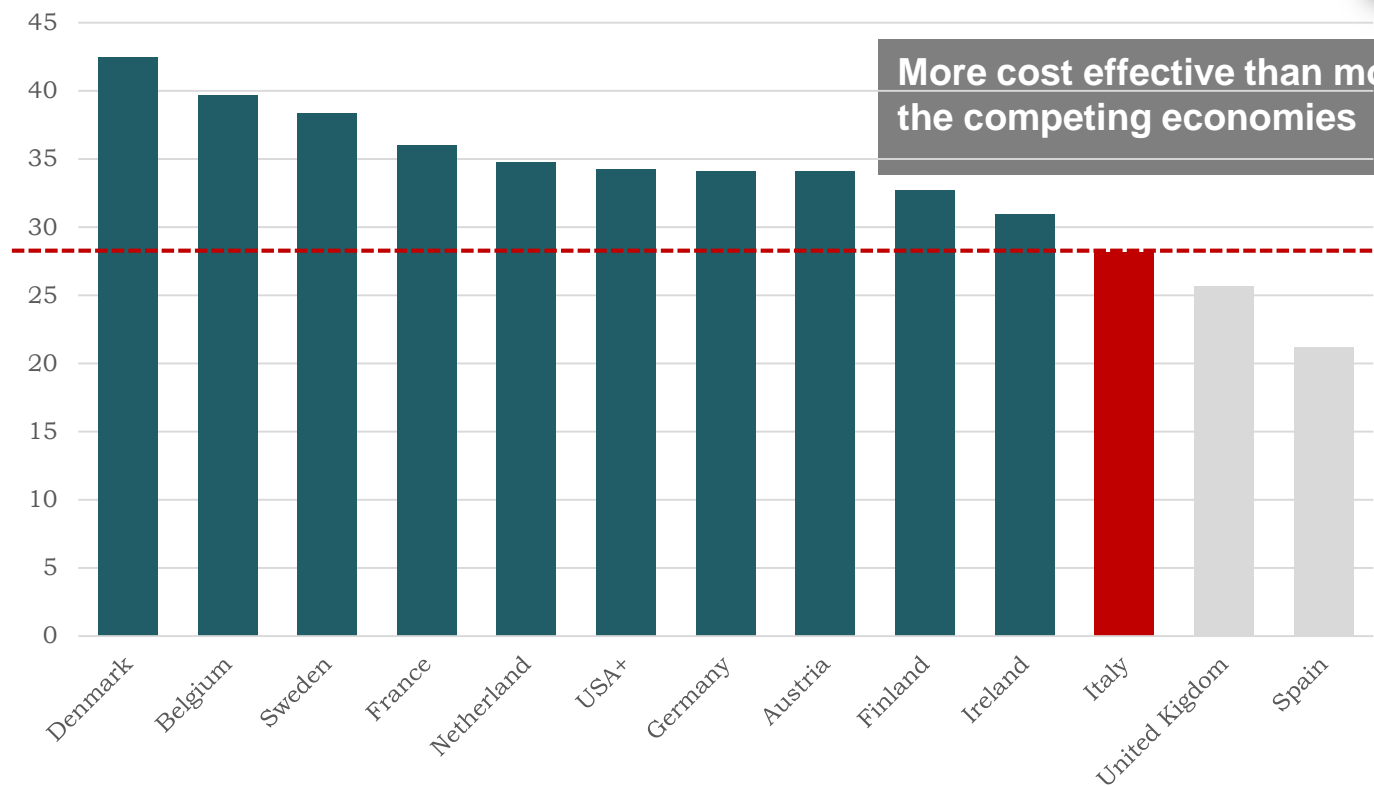




INVEST
IN ITALY



Labour cost (manufacturing hourly compensation costs; UE €)

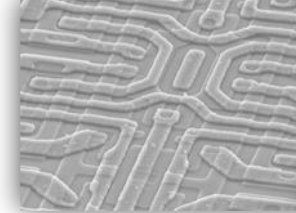


Source: Eurostat 2018 (2017 data); Conference Board, International Labor Comparisons (2017 – data 2016)

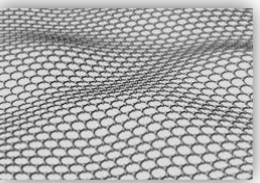




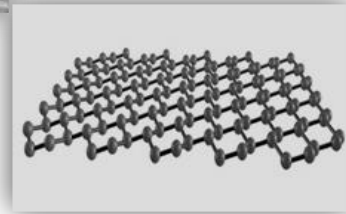
ITALY IS BACK



INVEST
IN ITALY



Economic Outlook



1% GDP growth
forecast for 2019
(2018 German GDP
0,6%)

New employment
policies IoT based

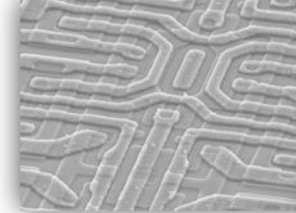
Export increased
by 3.5% between
2017-2018

Investors' confidence index
(2018) grows: +3
than 2017.

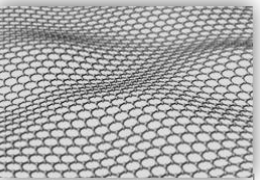
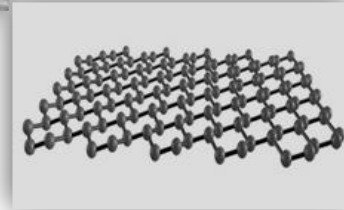
Italy ranks 10th in
2018 for FDI
attractiveness, +8
than in 2015

Italy is the 9th
economy in the
world, based on
strong export





INVEST
IN ITALY



Corporate Taxation Reform

In the last years the Italian Parliament approved new legislation, including tax incentives, specifically aimed at making Italy an attractive location for investment in manufacturing and R&D.

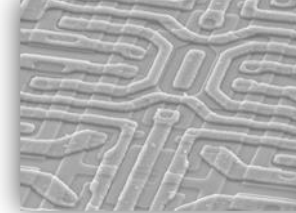
Among those specific tax incentives, the following are particularly relevant:

- **Patent box**
 - a 5 year-elective regime will grant a **partial tax exemption** on **income** derived from qualifying **intangible assets** (patents, know-how, trademarks) as long as the Italian company performs R&D activities
- **New R&D tax credit**
 - enhanced for 2015-2019, with the elimination of any access limitation based on turnover and a doubled cap amount (from 2.5M to 5M euro per year)
- **Tax credits/incentives** for the **purchase of digital machinery & industrial equipment** (iper depreciation 250%-200%-150%)
- **Full deductibility** from the **IRAP** (regional tax) of labour cost for **employees** hired on a **permanent basis**

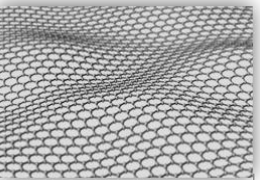
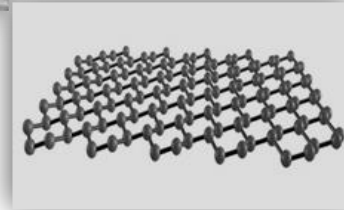




Corporate Taxation Reform



INVEST
IN ITALY



Other tax incentives are:

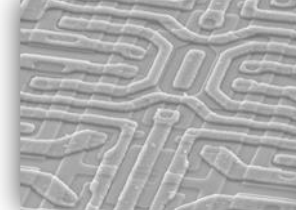
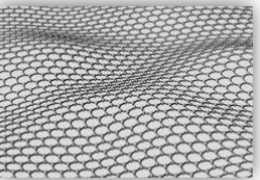
The “Destination Italy” Decree

- created a specific and dedicated **desk** of the **Revenue Agency** (*Agenzia delle Entrate*) in order to help and provide information **to foreign investors**
- enhanced the **tax ruling** procedures, by extending the validity period of the preventive rulings from 3 to 5 years and including also the existence of Italian permanent establishments of foreign companies

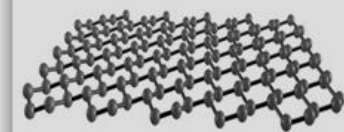
Incentives

Soon available a new single website portal for incentives to invest





INVEST
IN ITALY



Nanotechnology Industry



NANOTECHNOLOGY IN ITALY

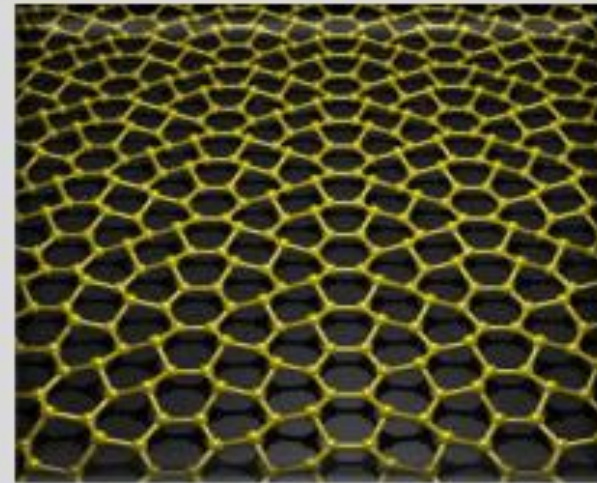
INVEST
IN ITALY

Nanotechnology

Nanotechnology ("nanotech") is the manipulation of matter on an atomic, molecular, and supramolecular scale.

It is estimated that the sector made 3 trillions \$ global investment in 2016.

The important role that nanotechnology continues to play is confirmed by The National Nanotechnology Initiative (USA), provided with \$1.2 billion in 2018.



Roots

From



IV a.C.

To 1959
Richard Feynman



Source: <https://www.nano.gov/>; <http://nanotechia.org/>



NATIONAL TECH CLUSTERS

INVEST
IN ITALY



MINISTRY OF EDUCATION, UNIVERSITY AND RESEARCH

• AEROSPACE TECHNOLOGY	ROME	http://www.ctna.it/
• AGRIFOOD	ROME	http://www.clusteragrifood.it/en/
• GREEN CHEMISTRY	MILAN	http://www.clusterspring.it/home/
• INTELLIGENT FACTORIES	BOLOGNA	http://www.fabbricaintelligente.it/en/
• CLUSTER TRASPORTI	ROME	http://www.clustertrasporti.it/
• LIFE SCIENCE	MILAN	http://www.clusteralisei.it/en/
• SMART LIVING TECHNOLOGIES	ANCONA	http://www.smartlivingtech.it/en
• SMART COMMUNITIES TECH	TURIN	http://www.smartcommunitiestech.it/en/

What's coming next...

- HERITAGE TECH
- DESIGN, MADE IN ITALY
- SEA ECONOMICS
- ENERGY



ITALIAN TECHNOLOGY INSTITUTE

National Foundation financed by the State to conduct scientific research for the purpose of technological development. IIT aims to promote excellence in basic and applied research and to promote the development of the national economy.

INVEST
IN ITALY

IIT's production includes **8569 publications**, over **150 European projects** and **17 ERC** (European Research Council) **projects**, more than **500 active patent applications**, **17 established start-ups** and 26 under due diligence.

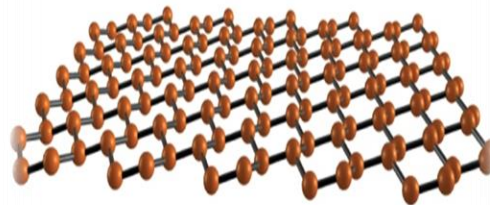
Since 2009, the Institute's scientific activity has been further strengthened with **the creation of eleven IIT research centres in Italy** (in Turin, two in Milan, Trento, Rome, two in Pisa, Naples, Lecce, Ferrara) and **two outstations located abroad** (MIT and Harvard in the US)

11 scientific programs of three types:

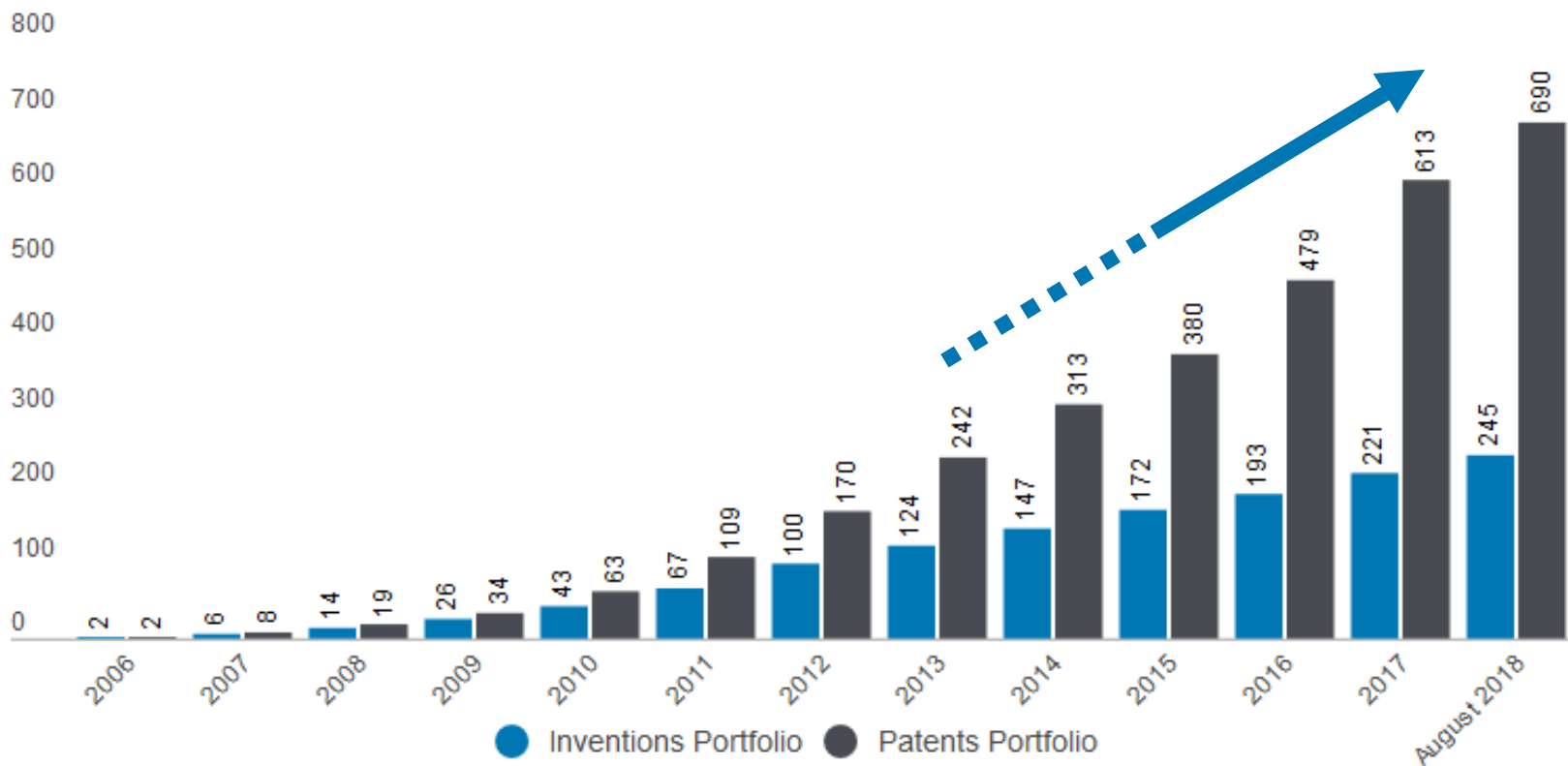
Technology Programs, primarily aimed at developing High tech research in collaboration with external entities and industries:
Portable Energy, Robotic Rehabilitation,
Graphene

Core Programs, dedicated to the basic research activities traditionally developed by IIT :
Brain Science, Robotics, **New Materials**,
Materials Chemistry

Cross Disciplinary Programs, primarily devoted to high risk-high return research both basic or applied:
Interaction, Health Technologies, **Nano-Bio**
Photonics, Computation



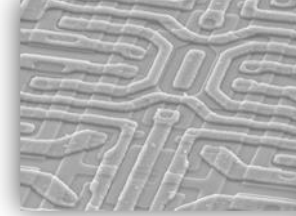
TECHNOLOGY TRANSFER (Inventions and Patents)



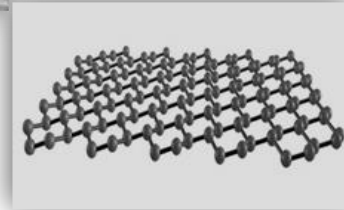
Source: <https://multimedia.iit.it/asset-bank/assetfile/9590.pdf>



ITALY'S GOT TALENT



INVEST
IN ITALY



Abundant and Skilled Workforce

Italy has some of the world's best engineering universities. Indeed, engineering is the 2nd highest course for enrolment in the country – **261,361** currently studying an engineering discipline (14.5% on total new students).¹

The engineering sector currently employs around 417,000 people in Italy.²



POLITECNICO
DI TORINO



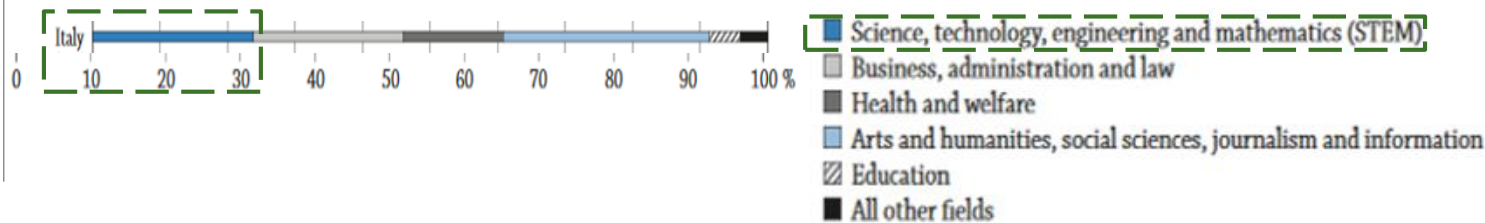
UNIVERSITÀ
DEGLI STUDI
FIRENZE

And much more.

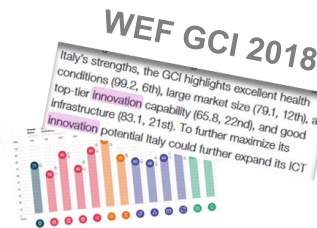


The Technological Departments of the Italian Universities annually produce a pool of graduates with the knowledge and industry experience to immediately enter the work force.

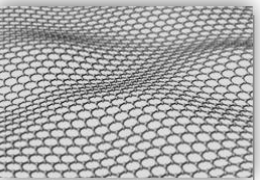
Tertiary-educated 25-64 years old (2016) – Fields of study



Source: ¹Ministry of Education ²Press



Mainstay



NANOTECHNOLOGY SCIENCE PARKS AND DISTRICTS



ASTER – Innovazione attiva	https://www.aster.it/
MATE Distretto tecnologico nuovi materiali	http://www.distrettomateriali.it
IMAST – Distretto campano on Materials engineering	http://www.imast.biz/ (*)
DHITECH – Distretto Tecnologico Pugliese High Tech	http://www.dhitech.it/
Distretto Tecnologico Sicilia Micro e NanoSistemi	http://www.distrettomicronano.it/
Distretto Tecnologico delle Bioscienze del Lazio	http://www.lazioinnova.it/
CBM – Consorzio Centro Biomedicina Molecolare –	https://www.cbm.fvg.it/
DISAT – Politecnico di Torino	http://www.disat.polito.it/it/
Umbria Tech District	

● Three Applied Research Centres keeping up with the world best Practices



(*) <http://www.regione.campania.it/regione/it/tematiche/distretti-tecnologici/imast-ingegneria-dei-materiali-polimerici-e-compositi-e-strutture?page=1>

LECCE
BARI
RENDE
ROME

INVEST IN ITALIAN TECH

INVEST
IN ITALY



ITALIAN INNOVATION DAYS, ASIA AND...



2017

NORTH AMERICA



THE EXTRAORDINARY
ITALIAN TECH
Innovation Days

2018



BIAT Sections
Aerospace
Environment
Biotechnologies
Greentech
ICT
Nanotechnologies
New materials
Mechatronics
Smart Communities technologies



FLAT MATERIALS

INVEST
IN ITALY

NEW MATERIALS FOR NEW TECHNOLOGIES

GRAPHENE (since 2004)

may be the most amazing and versatile substance available to mankind, is a credible starting point for new disruptive technologies across a wide range of fields.

- thinnest compound known
- strongest compound discovered
- lightest material known
- Flexible
- extremely electrically and thermally conductive (but not semiconductor)

Cooperation opportunities:



Directa Plus (Monza) is one of the largest producers and suppliers of graphene



Gnext (Bologna) developed a unique technology to apply graphene GNPs to a wide range of materials

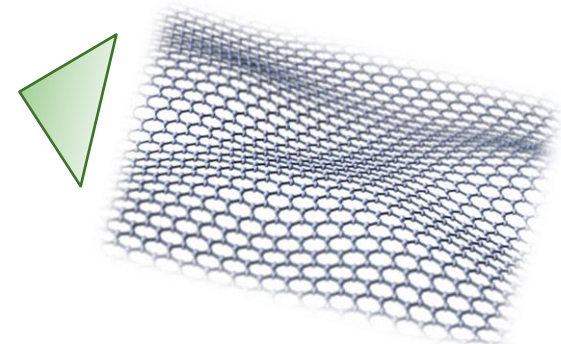


(Arezzo) produces and markets conductive silver-based inks, pastes and graphene based materials

European Union in support:

With a budget of €1 billion, the Graphene Flagship represents a new form of joint, coordinated research on an unprecedented scale, forming Europe's biggest ever research initiative.

Source: www.industriaitaliana.it; Press



FLAT MATERIALS

BEYOND GRAPHENE, SINCE 2014

INVEST
IN ITALY

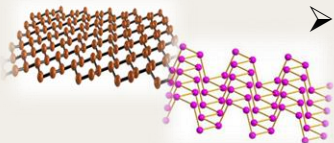
A new era is at the door:

- **SILICENE**
- **PHOSPHORENE**
- **Germanene**

differently than graphene, the best conductor ever, these are more suitable to digital purposes

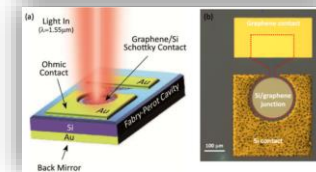
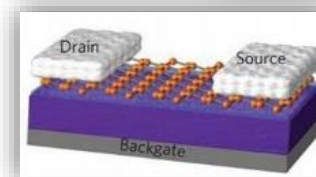
- **Stanene**

➤ **Photonic light-based super computer** (converter infrared light/electricity)



☐ Super transistors

☐ Optical computer
And more...



Italian Nanotech (Imm-Cnr) in Agrate Brianza (Quaranta-Molle), Naples, Sesto Fiorentino

IMM Institute for Microelectronics and Microsystems

In the field of textiles:

SMART TEXTILES, from fibres interwoven with a silver-copper alloy to Tech clothes connected with graphene Ink



RAIOT



TERAHERTZ LASER, the new infra-red rays

Nano-Cnr and Pisa University

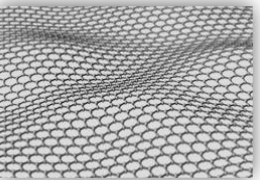
CNRNANO
ISTITUTO NANOSCIENZE CONSIGLIO NAZIONALE DELLE RICERCHE

Source: "Nature Nanotechnology"; <http://pubs.acs.org/journal/ancac3>

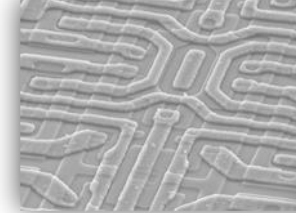




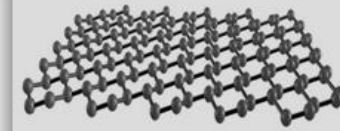
FLAT MATERIALS



NANOCHRISTALS MADE IN ITALY



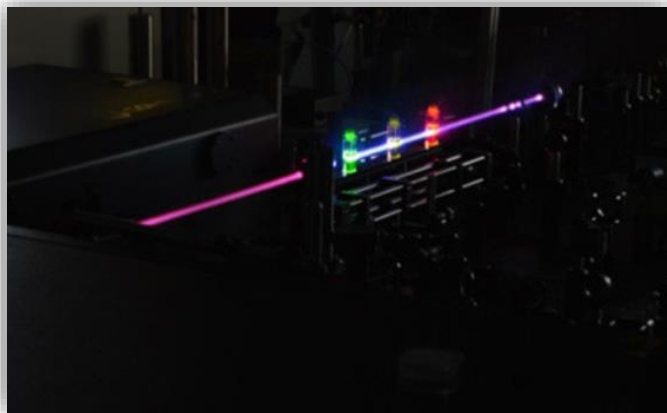
INVEST
IN ITALY



Research

IIT - NANOCRYSTAL PHOTONICS LAB

Colloidal semiconductor nanocrystals, particles small enough to tune their opto-electronic properties by quantum confinement.



Applications can be found in linear and nonlinear fluorescent dyes, color-converting phosphors, gain material for lasers, single photon emitters, nonlinear optical switches or optical sensors.

Application

QUANTUM DOT FROM LASER



UNIVERSITÀ
DEGLI STUDI
FIRENZE

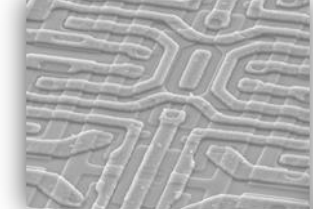


An Italian new technic useful to
Photonic Integrated circuit

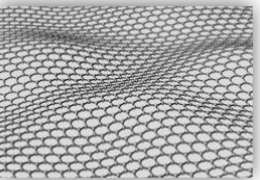




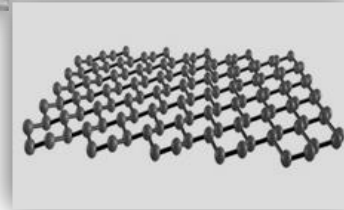
NANOTECHNOLOGY, NOW...



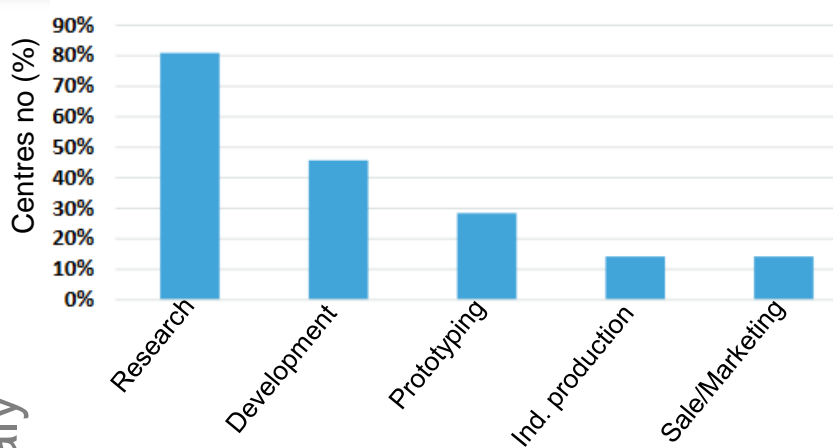
INVEST
IN ITALY



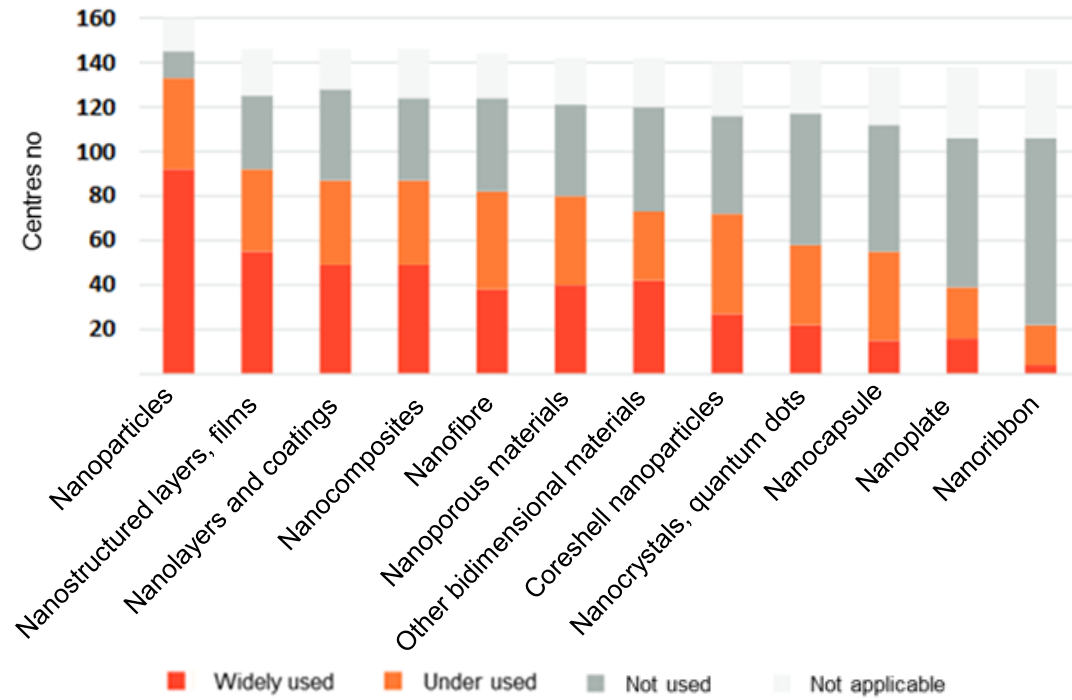
NANOMATERIALS MADE IN ITALY



Field of activity

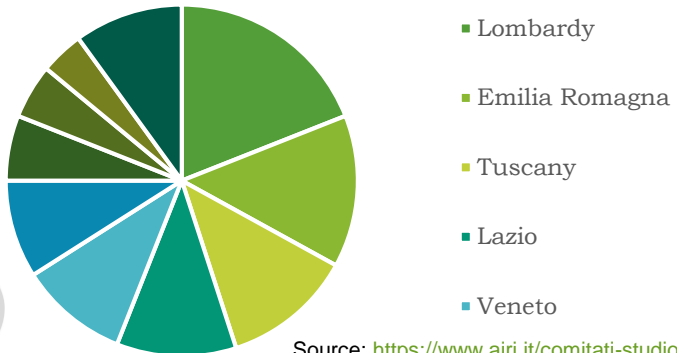


Type of nanomaterial



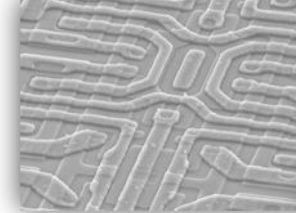
Where in Italy

Italian Regions and Nanotech

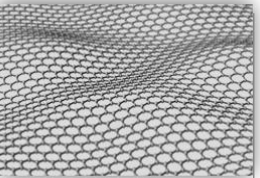
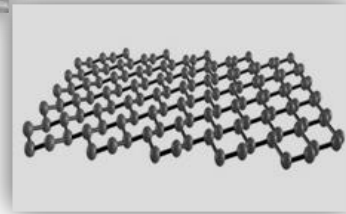




SKILLED IN DEVELOPING NEW TECHNIQUES...



INVEST
IN ITALY



FACULTY OF
ENGINEERING

ENGINEERING UNIVERSITIES

Strenghts



CINECA - INTERUNIVERSITY ASSOCIATION

<https://www.cineca.it/>



CNR

<https://www.cnr.it/>

Consiglio Nazionale
delle Ricerche



INSTITUTE OF NANOTECHNOLOGY

<http://nanotec.cnr.it/>



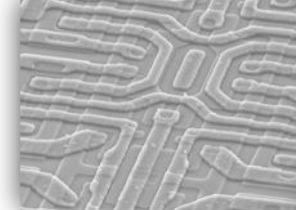
ISTITUTO
ITALIANO DI
TECNOLOGIA

ISTITUTO ITALIANO DI TECNOLOGIA

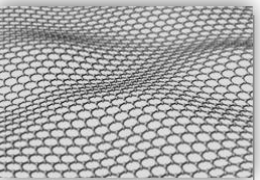
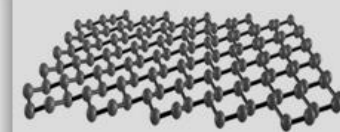
<https://www.iit.it/it/home>



INVITALIA



INVEST
IN ITALY



Companies Associations:



ASSOKNOWLEDGE

<http://www.assoknowledge.org/>



<http://nanotec.cnr.it/>



<http://www.airi.it/comitati-studio-gruppi-lavoro/airi-nanotec-it/>



<https://www.nanoitaly.it/nanoitaly/en/>

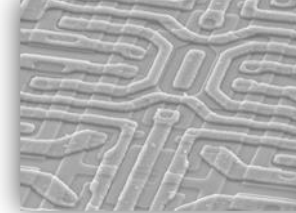
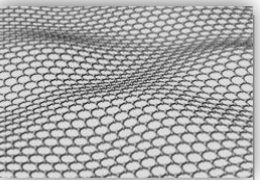


Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile

<http://www.enea.it>



INVITALIA



Nanotechnology

Industry trade shows and events:

