Advanced X-ray source based on field emitting Carbon Nanotubes cold cathode

Fact Sheet

Project Information

AXIS
Grant agreement ID: 222260

Project website

Status
Closed project

Start date
1 September 2008

End date
28 February 2011

Funded under
FP7-SME

Overall budget
€ 1 434 239,80

EU contribution
€ 1 105 255,80

Coordinated by
CONSIGLIO NAZIONALE DELLE RICERCHE
Italy

Objective

The project develops an innovative x-ray source based on the emerging technology of field emitting carbon nanotubes (CNT). This kind of source has several advantages with respect to traditional sources: higher intrinsic brilliance; possibility to work in pulsed and continuous mode; higher peak power; minor power consumption; modularity of beam size; good stability and longer life time. These sources are also more compact and robust, therefore suitable to be portable. The R&D activity is based on four major blocks: i) development of the cathode made of a well aligned CNT array, capable of delivering high current electron density in continuous and pulsed mode; ii) fabrication of a CNT-based electron gun which combines the CNT cathode with electron focusing optics; iii) integration of the e-gun in x-ray sources, and fabrication of an x-ray microfocusing source with characteristics of high brilliance, continuous and pulsed operation modes, easy control of beam size and power; iv) integration of the microfocusing source in two x-ray systems devoted to specific applications: a tomographic system for biomedical applications and an
advanced system for material metrology applications. The implementation of phase contrast imaging methodology with this innovative source will be studied. The project will strongly enhance the competitiveness of the SME’s involved in the project. The potential exploitation goes far beyond the examples addressed in the project: X-ray sources are routinely used in medical radiography, in security, in industrial quality control, in advanced research, in environmental issues and in cultural heritage. The availability of innovative sources with improved features with respect to the standard ones will have a great impact not only on Europe competitiveness in this field but also on societal aspects such as health, security, product quality, sustainability.

Field of science

/ natural sciences/physical sciences/optics
/social sciences/other social sciences/social sciences interdisciplinary/sustainable development

Programme(s)

Topic(s)

Call for proposal

FP7-SME-2007-1

Funding Scheme

BSG-SME - Research for SMEs

Coordinator

CONSIGLIO NAZIONALE DELLE RICERCHЕ

Address

Piazzale Aldo Moro 7
00185 Roma

Italy

Website

Contact the organisation

Administrative Contact

Caterina E. Ghio (Dr.)

Participants (8)
YORK PROBE SOURCES LIMITED
United Kingdom
EU contribution
€ 292 860
Address
Wydale Road 23
Y010 3PG York
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Website
Contact the organisation
Administrative Contact
Aisha Bakoush (Ms.)

DELONG INSTRUMENTS AS
Czechia
EU contribution
€ 292 085
Address
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61200 Brno
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Contact the organisation
Administrative Contact
Michal Dristicka (Dr.)

XENOCS SA
France
EU contribution
€ 236 177
Address
Rue Francois Blumet 19
38360 Sassenage
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Website
Contact the organisation
Administrative Contact
Frédéric Bossan (Prof.)
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<td>Rossella Mantini (Dr.)</td>
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**Record number:** 94828  

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