

STSM REPORT

STSM Application number: ECOST-STSM1205-170314-039826
STSM Grantee: Janis Spigulis
STSM title: Multispectral skin imaging
Home Institution: University of Latvia, Institute of Atomic Physics and Spectroscopy (Riga, LV)
Host Institution: CD6 Centre for Sensors, Instruments and Systems Development (Terrassa, ES)
STSM period: 24/02/2014 – 2/03/2014
STSM purpose: Joint studies of multispectral imaging technologies for skin cancer detection

Description of the work carried out during the STSM:

During the visit main emphasis was put on analysis of the options for skin multispectral imaging aiming at detection of skin cancer (melanoma). Besides theoretical and methodological considerations, an operating prototype device for multimodal skin imaging (*SkImager*) has been demonstrated and tested in the laboratory. The specific operation conditions and algorithms for processing of three image cubes (multispectral, video-perfusion and video-fluorescence), as well as the new ideas arising in result of the tests were discussed in frame of CD6 seminar on 28/02.

Description of the main results obtained:

1. Optimized conditions for skin melanoma detection by means of multispectral imaging identified.
2. Features of spectral imaging of skin under infrared illumination around 950nm specified.
3. The most appropriate algorithms for skin melanoma-nevus differentiation selected.
4. Technology approaches of both partners compared and options providing the highest sensitivity/specificity of the skin cancer detection outlined.
5. Plans for further collaboration agreed: clinical tests of *SkImager* in Barselona Hospital in June-July; return visit to Riga during 2nd half of August, including participation at the international AOMD-8 conference.

Mutual benefits for the Home and Host institutions:

The partner's approaches and technologies for optical skin assessment are different, so this visit helped to find the optimal ways to proceed in the related projects of both parties on skin cancer detection.

Future collaboration with the Host institution (if applicable):

Clinical tests of *SkImager* in Barselona Hospital in June-July; return visit to Riga during 2nd half of August, participation at the next COST events in Malta and/or Trondheim; eventual IPR transfer to industry of the Catalonian region.

Foreseen journal publications or conference presentations expected to result from the STSM (if applicable):

Eventually possible after the results of clinical measurements in Barcelona hospital will be processed.

Connect also this to the results.

x *Innovative knowledge resulting from COST networking through the Action. (Specific examples of Results vs. Objectives)*

Significant scientific breakthroughs as part of the COST Action. (Specific examples)

x *Tangible medium term socio-economic impacts achieved or expected. (Specific examples)*

Connect this to the results.

STSM outcome form STSM application number	Home institution & country	Host institution & country	BM1205 WG	Objective of the collaboration	Results of the collaboration
ECOST-STSM120 5-170314-039826	University of Latvia, Latvia	CD6 – Centre for Sensors, Instruments and Systems Development, Spain	WG4 Validation and evaluation of combined sensing modalities	Joint studies of multispectral imaging technologies for skin cancer detection	Progress both in hardware and software solutions for skin diagnostic multispectral imaging

I acknowledge that the described short term scientific mission was successfully carried out in the conditions here specified, and prospects for potential collaborations are expected in the coming months out of the agreements reached.

Terrassa, 25 March 2013



Santiago Royo

Director, UPC-CD6