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16th WP15 meeting

Thin Film for Superconducting RF (TF-SRF)

Oleg Malyshev
WP15 coordinator

Agenda

Focus on 3 main activities:

- Quadrupole resonator (QPR)
- Development and characterising of new SC coatings on small samples
- Final Delivery Report D15.4
 - To be submitted to ARIES leaders by 31/03/2020 for a review
 - Due by 31/04/2020 (to be submitted to EU portal after the review and correction implemented)

Schedule of milestones and deliverables

		Year 1				Year 2				Year 3				Year 4			
Task	Description	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	1 st WP meeting.	M1															
2	Evaluation of cleaning process for surface preparation for Cu and Nb substrate for Nb coating - (INFN).		M2		D1												
2-4	Evaluation of system 1 & 2 (e.g. NbN and Nb ₃ Sn coating) - STFC					M3			D2								
2-4	Evaluation of system 3 (e.g. MgB ₂ and SIS multilayer coating)									M4			D3				
1-4	Final report.																D4

now



List of milestones and deliverables

Typ e	Deliv ery date	Lead benefi ciary	Related task/ responsible	Description	Status
M1	m1	STFC	<i>Task 15.1</i>	1st WP meeting. Analysing outcome from EuCARD2 and current state of the field, finalising a detailed plan for WP	Completed
M2	m6	INFN	<i>Task 15.2</i>	First sample substrates cleaned at INFN for depositing at partners (Report to StCom)	Completed
D1	m12	INFN	<i>Task 15.2</i>	Evaluation of cleaning process. Report defining an optimum cleaning and polishing procedure for surface preparation for Cu and Nb substrate for Nb coating minimising the substrate effect on the final film properties.	Completed
M3	m14	STFC	Task 15.3, 15.4	First samples exchanged (system 1 and 2) and deposited at partners (Report to StCom)	Completed
D2	m24	STFC	Task 15.3, 15.4	Evaluation of systems 1 and 2. Report on deposition, surface and structural analysis, DC and RF superconductivity evaluation of systems 1 and 2 (e.g. NbN and Nb ₃ Sn) and Superconductor-Insulator-Superconductor (SIS) multilayer coating	Completed
M4	m26	HZB	Task 15.3, 15.4	First samples exchanged (system 3 and SIS) and deposited at partners (Report to StCom)	Completed
D3	M36	HZB	Task 15.3, 15.4	Evaluation of system 3. Report on deposition, surface and structural analysis, DC and RF superconductivity evaluation of system 3 (e.g. NbTiN or MgB ₂) and SIS multilayer coating	Completed
D4	M46 31/03/2020	STFC	Task 15.3, 15.4	Final report on thin film technology [46] Report summarizing the results on the evaluation of cleaning and coating procedures for highest Q ₀ and E _a	Not started Due by 31/04/2020

Publications

Please let me know a list of your publications for ARIES:

- ✓ Jornal Articles
- ✓ Reports
- ✓ Conference papers
- ✓ Technical notes
- ✓ Other
- ✓ Thesis

➤ Acknowledgment of H2020 funding in your papers!

The screenshot shows the Zenodo website interface for the ARIES repository. At the top, there is a search bar and navigation links for 'Upload' and 'Communities'. The user profile 'daniela.maria.antonio@cern.ch' is visible in the top right. The main content area is titled 'ARIES' and features a 'Recent uploads' section with a search bar and a list of publications. Each publication entry includes a date, category (e.g., 'Technical note', 'Journal article', 'Conference paper'), 'Open Access' status, a title, author list, a brief description, and an upload date. The sidebar on the right contains a 'New upload' button, a section for 'Want your upload to appear in this community?' with instructions, and a 'Community' section featuring the ARIES logo and project details. The project description states that ARIES is an Integrating Activity project funded by the European Commission's Horizon 2020 Research and Innovation programme, aimed at developing European particle accelerator infrastructures. It also mentions that ARIES will work towards improving the performance, availability, and sustainability of particle accelerators and transferring the benefits and applications of accelerator technology to both science and society.



IFAST (ARIES-II)

- **Approved on 3 November 2020**
 - Expected Result of EC evaluation: 17 August 2020
- Consortium Agreement preparation: Nov. 2020 – Mar. 2021
- Project starts: **1 May 2021** (at end of ARIES)
- Duration: 4 years (2021 – 2025)

SRF2021

- Possible talks including at least a few WP15 partners.
- The conference will be 5 days x 4 hours, so it will be much shorter than usual, thus for oral talks I suggest to combine the talks in focusing points.
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- **Development of thin film:**
 - All results on small samples or focus on materials different from pure Nb (Reza and Mike as lead authors in one or two talks, a joint talks is more likely to be accepted as an oral, the decision is yours)
 - Detailed posters on NbN, Nb₃N, SIS, etc. from each team (ASTeC, Siegen, INFN), please let me know you intention/preference.
- **QPR programme:**
 - Problem solved in manufacturing, polishing and deposition followed by the RF testing results (Oral, Oliver or Dmitry as a lead author).
 - Anything from CERN in relation to ARIES WP15?
 - Eduard and Cristian. Polishing, surface preparation, removing Nb film... if you think it is worth reporting at SRF conference.
 - Reza, Christian, Mike, are you planning to have separate posters on your facilities and results?
- Dan Turner, O. Malyshev et all. Study of SC thin films with a magnetic field penetration facility. (Oral)
- A. Medvids and other ARIES co-authors. Laser treatment in application to SRF cavities. (Poster)
- Dan Seal, Taaj Sean, Philippe Goudket, et all. Study of planar SC thin film coated sample at 7.8 GHz conditions. (Poster)
- Oleg: Report on ARIES WP15 programme and main outcomes, but I think that in short time of the conference it could be a poster only.
- Any other ideas ???.