



Welcome to the 1st Workshop of ARIES WP17 (PowerMat)

Politecnico di Torino, Turin 27.11.2017

Marilena Tomut (GSI), Alessandro Bertarelli (CERN)

ARIES WP17 PowerMat

- Thanks to Polito and particularly to Lorenzo and Martina for organizing this workshop in such an inspiring and beautiful location



PowerMat WP in a nutshell

- Develop and characterize novel composite materials based on graphitic and metal matrices with carbide and diamond reinforcements
- Test and online monitor materials behaviour under thermal shock (particle- or laser-beam induced) and irradiation
- Investigate radiation damage using numerical and experimental approaches.
- Identify and test novel materials for broader accelerator applications for high power targets, beam catchers, beam windows and luminescence screens
- Explore societal applications of these novel materials such as advanced engineering, medical imaging, quantum computing, energy efficiency, aerospace, and thermal management

ARIES WP17 PowerMat: Timetable

Monday 27 November 2017

Welcome Session (08:45-09:00)

A. Bertarelli (CERN)

Task 17.2 (09:00-11:45)

time	title	presenter
09:00	Task 17.2 - Objectives of Task 17.2	BERTARELLI, Alessandro (CERN)
09:15	Task 17.2 - Status of C-based materials development and perspectives	GUARDIA VALENZUELA, Jorge (Universidad de Zaragoza (ES))
09:40	Task 17.2 - Thermophysical and mechanical characterization of advanced graphitic materials	BIANCHI, Laura (Universita & INFN Pisa (IT))
10:00	Task 17.2 - UHV characterization of advanced materials and their coatings	ACCETTURA, Carlotta (Politecnico di Milano (IT))
10:20	Coffee Break (20 minutes)	
10:40	Task 17.2 - Results from recent investigations and characterization at GSI	BOLZ, Philipp (GSI)
11:10	Task 17.2 - Discussion on task objectives, actions and deliverables	

Additive Manufacturing (11:45-12:30)

time	title	presenter
11:45	Politecnico di Torino & Additive Manufacturing	FINO, Paolo (Politecnico di Torino)
12:00	Visit to Additive Manufacturing Facilities	

Lunch (12:30-14:00)

Taks 17.3 (14:00-17:20)

time	title	presenter
14:00	Task 17.3 - Objectives of Task 17.3	PERONI, Lorenzo (Politecnico di Torino)
14:10	Task 17.3 - Multimatt experiment	PASQUALI, Michele (Cern)
14:40	Task 17.3 - Dynamic characterization: first findings from Multimatt experiment	FICHERA, Claudio (Cern)
15:00	Task 17.3 - Measurement technique in HiRadMat experiments: requirements and solutions	GUINCHARD, Michael (Cern)
15:20	Task 17.3 - Collaborative efforts at GSI on irradiation and thermo-mechanical dynamic testing experiments	TOMUT, Marilena (GSI)
15:40	Coffee Break (10 minutes)	
15:50	STI HRMT27 + HRMT42 + future PROTAD and nTOF experiments	TORREGROSA MARTIN, Claudio Leopoldo (CERN)
16:10	STI HRMT-28, HRMT-35 and future Deep Impact experiment	NUIRY, Francois-Xavier (Cern)
16:30	Towards proton acceleration with 1 PW beams at ELI-NP	ASAVEI, Theodor (IFIN-HH)
16:45	Task 17.3 - Discussion on task objectives, actions and deliverables	

Visit to DYNLab (17:20-18:30)

Social dinner (19:30-22:30)



ARIES WP17 PowerMat: Timetable

Tuesday 28 November 2017

Task 17.4 (08:40-11:45)

time	title	presenter
08:40	Task 17.4 - Objectives of Task 17.4	LECHNER, Anton (CERN)
09:00	Task 17.4 - Requirements for radiation damage simulations regarding FAIR targets, beam dumps/catchers and previous experiments at GSI	TOMUT, Marilena Tatiana
09:20	Task 17.4 - Modelization of radiation-induced damage in FLUKA and material damage estimates for CERN injectors and future facilities	BRIZ MONAGO, Jose Antonio (CERN)
09:40	Task 17.4 - Update on radiation damage calculations for the HL-LHC betatron cleaning insertion	SKORDIS, Eleftherios (CERN)
10:00	Coffee Break (20 minutes)	
10:20	Task 17.4 - CERN's activities within the RaDIATE Collaboration	TORREGROSA MARTIN Claudio Leopoldo (CERN)
10:40	Task 17.4 - Plans and contributions for radiation damage studies by POLIMI	BEGHI, Marco
11:00	Task 17.4 - Discussion on objectives, actions and deliverables of Task 17.4	

Task 17.5 (11:45-12:45)

time	title	presenter
11:45	Task 17.5 - Introduction and objectives of Task 17.5	TOMUT, Marilena Tatiana
11:55	Task 17.5 - Development of new diamond based composites for luminescence screens	GRECH, David (RHP)
12:20	Task 17.5 - First characterization tests and planned experiments on diamonds and diamond based composites for luminescence applications	SIMON, Pascal (GSI)

Lunch (12:45-14:00)

J-tech: J-TECH@POLITO: Advanced Joining Technology at Politecnico di Torino (14:00-14:20)

time	title	presenter
14:00	J-TECH@POLITO: Advanced Joining Technology at Politecnico di Torino	FERRARIS, Monica (Politecnico di Torino)

Task 14.4 (14:20-15:10)

time	title	presenter
14:20	WP14.4	CARRA, Federico (CERN)

Kurchatov Institute: Kurchatov Institute (15:10-15:30)

time	title	presenter
15:10	Investigations of the effects of irradiation with fast particle fluxes on the material properties of Molybdenum Diamond composites for LHC Collimators using NRC-KI cyclotron	RYAZANOV, Alexander

Coffee break (15:30-15:40)

Wrap-up (15:40-16:30)



Milestones

Milestone number¹⁸	Milestone title	WP number⁹	Lead beneficiary	Due Date (in months)¹⁷	Means of verification
MS58	Organisation of PowerMat kick-off meeting (Task 17.1)	WP17	1 - CERN	6	Agenda, summary report
MS59	Irradiation campaigns at GSI for radiation hardness studies (Task 17.3)	WP17	23 - POLITO	27	Report to StCom
MS60	Irradiation effects analysis (Task 17.3)	WP17	1 - CERN	36	Report to StCom
MS61	Comparative compendium of materials developed (Task 17.2)	WP17	1 - CERN	40	Report to StCom
MS62	Dissemination of R&D results on novel materials for accelerator and societal applications (Task 17.5)	WP17	12 - GSI	46	Report to StCom

Deliverables

Deliverable Number¹⁴	Deliverable Title	Lead beneficiary	Type¹⁵	Dissemination level¹⁶	Due Date (in months)¹⁷
D17.1	Material characterization	1 - CERN	Report	Public	12
D17.2	Irradiation effect simulations	1 - CERN	Report	Public	44
D17.3	Irradiation test results	23 - POLITO	Report	Public	46

Deliverables and Milestones

Task	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
17.1		M														
17.2				D										M		
17.3									M			M				D
17.4														D		
17.5																M
1.4								D								

ARIES WP17 PowerMat: Workshop goals

- The main goals of this workshop are:
 - Define the WP work program for the next 6 – 12 months, including Deliverables and Milestones
 - Foster discussions, exchanges and collaboration between partners
 - Prepare the list of experiments, sampling, testing and characterization campaigns
 - Define next steps and meetings, e.g. annual meeting (ARIES annual meeting in Riga, LV, 22-25 May '18)
- **You should not leave this event unless you clearly know what you should do in the next 6 – 12 months!**
- **So let's start And enjoy the Workshop**