Introduction WG3 Gas and Material Studies

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DRD1 Collaboration Meeting at CERN 18th June 2024

Topics covered by the WG3: gas and material studies

Address common key issues related to gas and materials in the development of existing and future gaseous detectors

Gas	- -	Gas Properties (e.g. cross-section, chemical characterization, measurements) Eco-gases studies Light emission in gas
Systems	F -	Gas recuperation and recirculation systems
	-	Gas systems
		Sealed detectors and systems
Materials	-	Resistive electrodes
	-	Solid converters
	-	Photocathodes (novel, aging, protection)
	-	Novel materials (e.g. nanomaterials)
	-	Material properties for detector and infrastructures
	-	Light (low material budget) materials
E =		Precise mechanics
ter	_ -	Ageing
ong-term-	-	Outgassing
3 8	L-	Radiation hardness

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Assets that the collaboration can support

It is fundamental to have common infrastructures and facilities, that would help in the execution of the projects in a more coherent and economical way as well as they would allow a better sharing of knowledge in the different fields

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Gas properties

- simulation (support of software and training to the community): Garfield, Geant4, etc —> WG4
- database common for the different technologies

Material studies and development

 Common tools/facilities to develop and prepare materials —> WG6

Ageing studies

- facilities needed to perform ageing studies (for example GIF++) —> WG7
- infrastructure necessary to run the test (for example trigger system, etc) —> WG7

Outgassing, radiation hardness and material studies

 common facilities can be useful for all technologies —> WG7



Common objectives for WG3

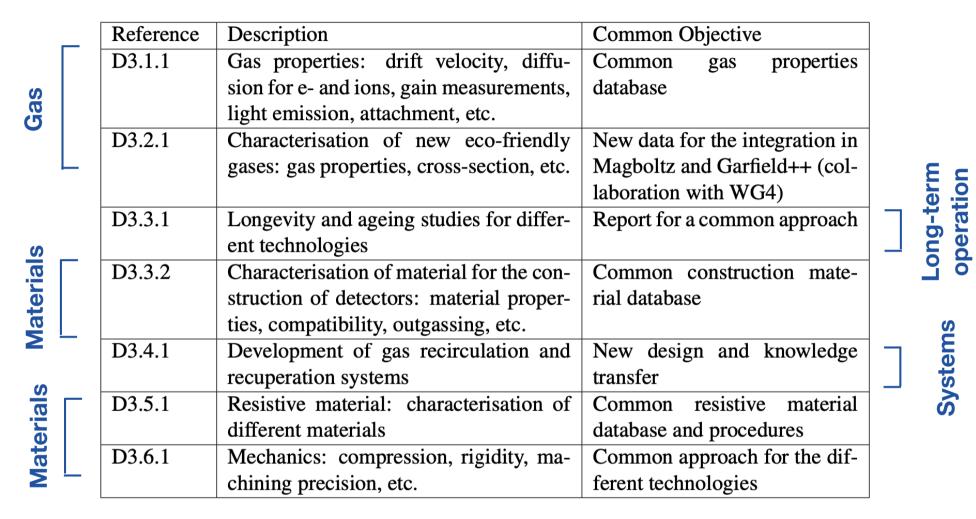


Table 13: WG3 - Common Objectives

We would like to start addressing some objectives in the coming months

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- Important to know if some objectives are of major interest for WPs
- Please let us know if you would like to contribute on some objectives

WG3 communication channels and activities

Contact email: <u>drd1-wg3-convenors@cern.ch</u>

Mailing list: drd1-wg3@cern.ch

E-group link to subscribe: <u>DRD1-WG3</u>

Official discussion forum: https://drd1-forum.web.cern.ch/

WG3 kick-off meeting on April 2024: https://indico.cern.ch/event/1394578/

- 15 contributions
- A good way to know each other and the research activities on-going related to WG3

Organisation of topical meetings/workshops in the coming months

- Meetings on specific activities
- Online workshop to show laboratories, facilities, activities, etc.
- Please let us know if you would like to address a particular research topic!

Changes in WG3 conveners

 Barbara Alvarez Gonzalez and Davide Piccolo will leave as WG3 conveners due to other commitments

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- Thanks a lot for their help and support in these months!

Today's contributions

14:00	Introduction	Alessandra Pastore et al.
	3162/1-K01, CERN	14:00 - 14:10
	Set-ups for gas properties characterization	Filomena Pinto dos Santos
15:00	3162/1-K01, CERN	14:10 - 14:40
	Studies on absorption of methane with zeolite material	Francesco Angiulli
	3162/1-K01, CERN	14:40 - 15:05
	Irradiation effects on GEM detectors operated at RUN1 and RUN2 at the LHCb experiment	Marco Poli Lener
	3162/1-K01, CERN	15:05 - 15:30
	Stability study of GEM detector and Perfomance study of a new RPC prototype	Dr Saikat Biswas
	3162/1-K01, CERN	15:30 - 15:55
16:00	Coffee break	
	3162/1-K01, CERN	15:55 - 16:25
	Studies of RPCs with gallium-arsenic electrodes	Alessandro Rocchi
	3162/1-K01, CERN	16:25 - 16:50
	Raspberry PICO and IoT for RPC chamber slow control	Laurent Mirabito
17:00	3162/1-K01, CERN	16:50 - 17:15
	Search for Eco-friendly molecules producing .F and F- during the degradation in gaseous de Dr Jelena Jovanovic et al.	tectors by using quantum

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