CREMLIN PLUS
Connecting Russian and European Measures for Large-scale Research Infrastructures

Draft Minutes

Constitutional Meeting of the WP3-SAC

Venue: Video Conference,
Date: April 12th, 2021

Participants:

No.	Beneficiary	Name
1	SAC Members	Helmut Schober, ILL Dieter Richter, FZJ Winfried Petry, TUM Andreas Schreyer, ESS Hartmut Zabel, University of Bochum Gregory Chaboussant, CEA-LLB Frank Schreiber, University Tübingen Victor Ezhov, NRCKI-PNPI Martin Müller, Hereon Guest of CREMLINplus SAC: Arantxa Arbe
2	WP3 Members	FZJ: S. Mattauch, A. Ioffe NRCKI-PNPI: S. Grigoriev, Y. Kirenko ILL: O. Zimmer CEA-LLB: A. Goukassov TUM: J. Neuhaus
3	External Guests	Viacheslav Em, NRCKI Michail Avdeev, JINR Anatoly Balagurov, JINR Andrey Konevega, NRCKI-PNPI Michail Kiselev, JINR Vladimir Voronin, NRCKI-PNPI

Agenda of the meeting:

First Meeting of the WP3-SAC

2021, April 12th, 14:00 – 17:00

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14:00 - 14:15 S. Mattauch (FZJ), Welcome and introduction from the leader of the WP3.

14:15 – 14:35 V. Voronin (NRCKI-PNPI)
Status and plans of the reactor PIK

14:35 – 14:55 Current status of the tasks in WP3
S. Mattauch (FZJ): Tasks (3.1-3.3 and 3.5)
S. Grigoriev (NRCKI-PNPI): tasks (3.4 and 3.6-3.9)

14:55– 16:30 Presentations of the priorities of different Russian communities
Each 15 minutes inkl. discussion

- Solid State Physics: S. Grigoriev (NRCKI-PNPI)
- Material Science: V. Em (NRCKI-PNPI)
- Chemistry: M. Avdeev (JINR)
- Chemistry: A. Balagurov (JINR)
- Biophyiscs/Biology: A.Konevega (NRCKI-PNPI)
- Biophyiscs/Biology: M. Kiselev (JINR)

16:30 – 17:00 SAC closed session

Attendees in the open SAC meeting: SAC members, CREMLINplus SAC Arantxa Arbe, task leaders and WP3 leader and co leader;
Attendees in the closed SAC meeting: SAC members, CREMLINplus SAC Arantxa Arbe

Blue Jeans link for computer login:
https://bluejeans.com/262264950/2646?src=htmlEmail&flow=joinmeeting

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Just in case:
Meeting ID: 262 264 950
Moderator Passcode: 2646

I. Welcome of WP3 Leader S.Mattauch (FZJ)

The leader of the WP3, S. Mattauch, welcomes the SAC members, external experts and WP3 colleagues to the first WP3-SAC meeting and determines the required two-third participation of the SAC members to constitute a regular SAC meeting. In the introduction S. Mattauch presents the Terms of Reference of the WP3-SAC to the SAC members and continues with the election of the SAC chair. He suggests Dieter Richter as the SAC chair which is accepted without any vote against. For the vice chair position Helmut Schober is suggested and in the same way accepted without any vote against. From now on Dieter Richter is taking over the meeting and starts with an introductory speech before continuing with next topic.

II. Status and plans of the reactor

Vladmir Voronin gives a presentation about the Status and plans of the reactor PIK (see attached slides). There are no questions after the talk.

III. Current status of the tasks in WP3

First S. Mattauch is presenting the tasks 3.1, 3.2, 3.3 and 3.5. The presentation is attached to the minutes. After the talk D. Richter ask what the time frame of the low moderator CNS (Cold Neutron Source) is. The answer is given by A. Ioffe and it is roughly 1 year till starting the manufacturing as the knowledge of the design is already there with the ESS CNS manufactured by FZ-Jülich. The final tests of the CNS is planned to be done at the Budapest reactor BNC. S. Grigoriev asks the PIK-SAC for an official recommendation for a cooperation agreement between LLB and NRCKI-PNPI.
After this discussion S. Grigoriev presented the tasks 3.4, 3.6, 3.7 3.8 and 3.9 (slides are attached to this minutes). After the talk W. Petry places the comment that the floor plan presented in the task 3.4 and the floor plan in the talk of V. Voronin are not identical but quite different. D. Richter suggests to move the discussion of this obvious finding into the closed session.

IV. Presentations of the priorities of different Russian communities

S. Grigoriev opens this part by a presentation of the activities of Solid State Physics community and is restricting him to the magnetism community. In the talk he is suggesting to have the following instruments:

- Powder diffraction: Magnetic ordering in the newly synthesized low-dimensional frustrated magnets
- Single crystal polarized diffractometer: Multiferroics
- Triple-Axis spectrometer: Magnetic excitations
- Polarized SANS: Ferromagnets and helimagnets with DM interaction
- Polarized Reflectometer: Magnetic thin films and multilayer structures
- SANS: Artificial magnetic nanostructures: nanodot arrays, nanowire array

After the presentation (attached to the minutes) the question is raised how big the magnetism community is in Russia. The answer of S. Grigoriev is more than thousand members.

Next speaker is V. Em (NRCKI-PNPI) about the Material Science community and the proposed instrument for PIK beside the defined instruments in the Phase 1 and Phase 2:

- Stress diffractometer
- Imaging station (energy resolved)

H. Zabel notes that resolution in imaging is one point but the area you can cover with the detector another. The answer by V. Em is that in the presented instruments at JINR (NRT) it is 200mm x 200mm and at the reactor IR-8 (DRAKON) it is 75mm x75mm. W. Petry points out that these type of suggested instruments are specifically necessary for the engineering and material science community.

M. Avdeev presents the view of the Russian chemistry soft matter community by collection information from last year conferences with Russian organizers. His main neutron methods for studying soft interfaces are:

- SANS
- Neutron Reflectometry

for the following scientific areas:

- Complex fluids
- Amorphous materials
- Polycrystalline and composites materials
- Magnetic colloids

F. Schreiber asks after the talk whether there are any deuteration facilities in Russia available. The answer by M. Avdeev is, no and so far in Russia the samples are bought from companies that are specialised on the deuterating samples. JINR has no lab for this. Furthermore in general the community is using all international Neutron Facilities and therefore does not need any special sample environment (SE) but for PIK the SE should be kept in mind as it is not only the instrumentation that is needed for science.

Next in the row is A. Balagurov (JINR) reporting about the structural studies with neutron diffraction at PIK for crystallography, chemistry and physics. As a stock set of diffractometers he sees 4 instruments for 70-80% of the science cases:

- Single crystal (thermal), reference D19@ILL: Conventional crystallography, organometallic complexes, Hydrogen-bonded systems, mineral compositions, modulated structures biological molecules.
- Powder – high resolution, reference D2B@ILL: structural studies of non-rigid molecules, ab-initio structure solution from powders
- Powder – high intensity, reference D20@ILL: Thermo diffractometry, kinetics, multi stroboscopic, very small samples, highly absorbing samples
- Long-periodic structures as in biological single crystal samples: quasi-Laue for biology, reference LADI-III@ILL

For the instruments he sees a need for monochromators, collimators and detectors, as well as for good sample environment like 7T cryo magnets with ^{3}He inserts, 1300k furnaces and Paris-Edinburgh high pressure cells.

During the next talk of A. Konevega (NRCKI-PNPI) for the biophysics community and their so far not existing neutron instrumentation at PIK the chair loses the internet connection and the vice chair H. Schober takes over.

- Time-Resolved SANS (reference KWS2@MLZ) and Ultra SANS (reference KWS3@MLZ)
- Neutron crystallography (biological samples) (reference BIODIFF@MLZ, LADI-III@ILL
- Neutron Spin Echo for dynamics (JNSE@MLZ, IN15@ILL)

Even in X-ray crystallography, structural kinetics and Cryo-electron Microscopy he sees a lot of potential for improvements.
W. Petry would suggest additional instruments like TOF Spectroscopy and Backscattering for shorter time scales. F. Schreiber suggest again a deuteration facility on site. This is agreed by A. Konevega but so far nothing is planned.

Before the last talk is given the chair D. Richter is back in the VC and takes over from H. Schober. The last talk in this row is given by M. Kiselev (JINR) about the needs of the biology community:

- Diffractometer: reference V1@HZB and RTD@JINR
- SANS

The chair thanks all the presenters for the talks and participants for the interesting discussions and closes the session for the closed discussion of the SAC.