

**SPring-8 Users Community Study Group Opinion Gathering Report (FY2022)**

Research Group: High-Resolution X-ray Imaging Group

《Consolidation of Opinions at the Study Group》

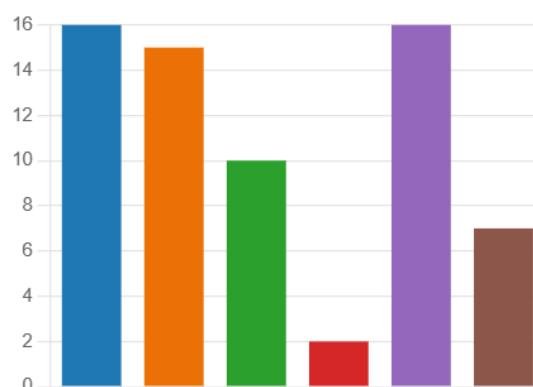
In order to obtain a wide range of opinions, this year's study group conducted an online survey (PDF attached) on Forms from late January to late February, and received 49 responses. Each item allowed multiple responses. The study group has over 1100 members, many of whom are students, so if we consider the number of responses as the number of groups, we believe that we were able to aggregate a considerable amount of opinions of the study group.

### 1. Beamlines

The main beamlines for imaging applications are BL20B2, BL20XU, BL28B2, and BL47XU, which seem to cover major imaging research at SPring-8 without bias. Other BLs are distributed among BL11XU, BL24XU, BL29XU, BL40XU, etc.

#### 1. どのビームラインをお使いですか？ Which beamline are you using?

詳細



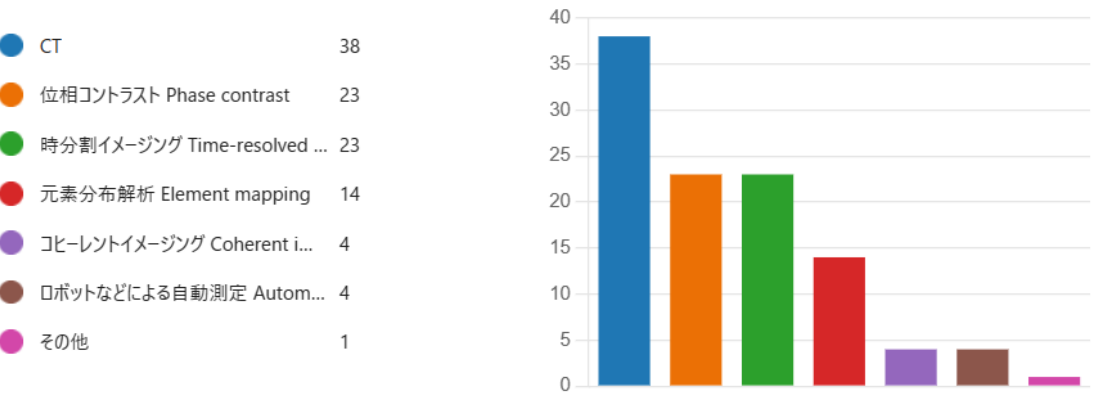
2. Measurement devices and research methods sought in the future

About 80% of the respondents answered CT, which is an important method sought by many users. Phase contrast, time-resolved measurement, and elemental analysis were next, indicating the need for equipment and methods that correspond to each research theme.

2. 今後の解析で求める測定装置や手法はどのようなものでしょうか？

What type of measurement devices and methods are you looking for in your future analysis?

詳細



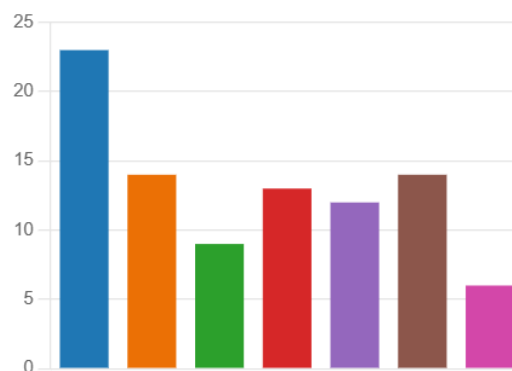
### 3. resolution and field of view desired in the future

The most common opinion was for a resolution of 30 nm. Given the large number of CT responses above, the rotational accuracy and drift of the specimen will be a bottleneck in achieving this resolution with CT. Both hardware and software considerations, such as the introduction of an air-bearing rotation stage and reconstruction calculations using the nonrigid CT method, are likely to be necessary. On the other hand, in terms of percentage, approximately 70% of the total responses requested the 100 nm to 10  $\mu$ m resolution that is currently in use, and each of the current measurement modes also needs to be maintained and improved.

3. 今後の解析で求める空間分解能と視野は、どの程度でしょうか？ 分解能と視野が反比例することをご勘案ください。  
What is the spatial resolution and field of view needed in your future analysis? Please consider that resolution and field of view are inversely proportional.

[詳細](#)

● 30 nm resolution, 30 $\mu$ m field of...	23
● 100 nm resolution, 100 $\mu$ m FOV	14
● 300 nm resolution, 300 $\mu$ m FOV	9
● 1 $\mu$ m resolution, 1 mm FOV	13
● 3 $\mu$ m resolution, 3 mm FOV	12
● 10 $\mu$ m resolution, 10 mm FOV	14
● その他	6

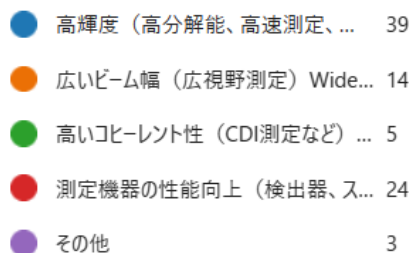


#### 4. priorities in the future plan

The majority of the respondents demanded high luminance, which is consistent with the direction that the next SPring-8 project is aiming for. On the other hand, there are many opinions calling for improved performance of measurement instruments, and it is considered necessary to upgrade measurement-related instruments inside and outside the experimental hutch at the same time.

4. SPring-8の将来計画の中で、イメージング研究で優先すべき点は何でしょうか。  
What is the priority for imaging research in SPring-8's future plans?

[詳細](#)

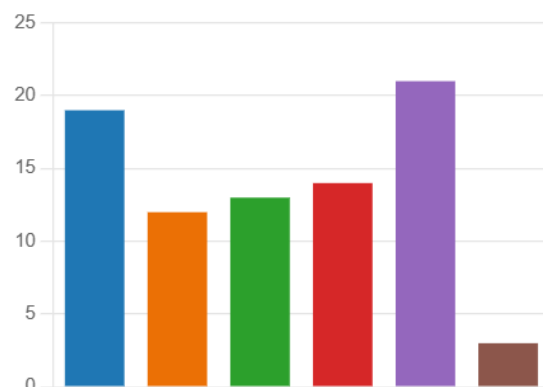
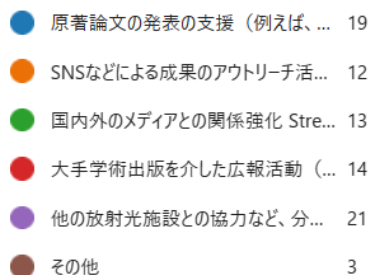


#### 5. measures to improve recognition of results

Many respondents cited bringing together the field through cooperation with other institutions, etc. and providing support for the publication of original papers, but opinions were divided and various methods should be explored.

5. SPring-8で得られる成果の認知度を上げるためには、どのような施策を進めればよいでしょうか？  
What measures should be promoted to increase awareness of the results obtained at SPring-8?

[詳細](#)



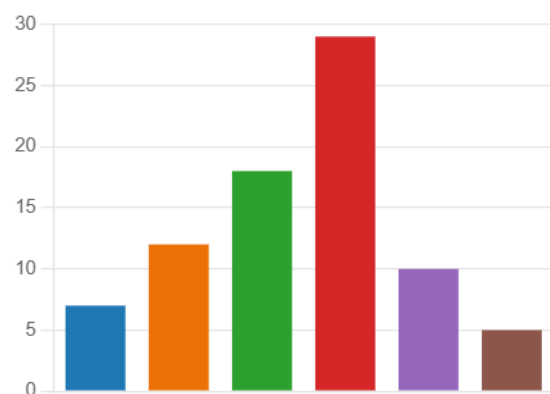
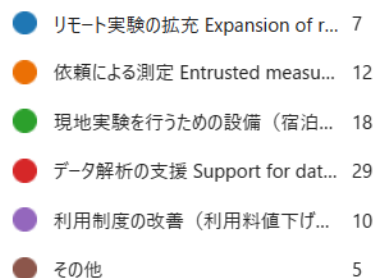
## 6. items that require enhancement

The majority of the responses requested support for data analysis. It is thought that a system that allows users to consult and request data analysis would lead to the creation of new results. This was followed by many requests for facilities to conduct on-site experiments, such as lodging and meals, as well as requests for requested measurements.

### 6. 以下の中で充実を求めたい項目はどれでしょうか？

Which of the following items would you like to see enhanced?

[詳細](#)



## 7. other

Major individual opinions (Please keep this item private)

-- I appreciate your detailed support in making my stay more comfortable. In item "6," you checked "Facilities (lodging, meals, etc.). This is our preference for meals when we visit for experiments by public transportation. We think the prices are appropriate. The dining hall is open only during limited hours, which is a little inconvenient since we have to plan our experiments according to the dining hall. The nearest convenience store is also far away by foot, and it is difficult to go out especially at night, so it is difficult to buy food.

-- The CT imaging system at SPring-8 can achieve high resolution, which is difficult to achieve with laboratory CT, and is a very valuable piece of equipment for us. This may be the reason why the beamtime is so crowded, and it is extremely difficult to use the system unless it is a NEDO project, for example. One of the reasons for the crowded beamtime is that machine time is allocated only on a 24-hour basis due to staff shortages. If more staff were available and experiments could be conducted in

eight-hour intervals, more users would be able to use the beamline, and the proposal acceptance rate would be reduced and more results would be obtained.

-- The beamline scientists have been really helpful to us, so I would like you to increase the number of people.

-- We are looking forward to working at SPring-8! Thank you very much for the opportunity.

-- BL20B2 previously had a lapped monochromator that provided the high flux we require for high speed imaging. This is no longer available with the new monochromator. We would like to have the lapped monochromator reinstalled to enable the high image quality that we used to achieve. Thank you for considering this request.