

# Attempt at designing an ideal X-ray biomedical beamline

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We have been developing X-ray optics for medical imaging for longer than 10 years [1]. The radiation sources ever used are bending radiation source, 5T superconducting wiggler, 1T 16 period multipole wiggler of permanent magnets. X-ray optics ever used are in-line holography, multi-layer X-ray optics, DEI and X-ray dark-field imaging optics. Based on these experiences we would like to propose a new concept of beamline that comprises two switchable insertion devices as radiation sources such as 10T superconducting wiggler as a function of wave shifter and an undulator, Laue type pre-monochromator, Laue-Bragg combined monochromator in an experimental hutch. Spatial resolution and FOV should be  $0.1\text{mm} \times 0.1\text{mm}$  of FOV with  $1\text{ mm} \times 1\text{ mm}$ ,  $1\text{ mm} \times 1\text{ mm}$  of FOV with  $25\text{ mm} \times 25\text{ mm}$  and  $5\text{ mm} \times 5\text{ mm}$  of FOV with  $32\text{ mm} \times 32\text{ mm}$ . This conceptual design is a result of collaborative synchrotron radiation work between three countries. All details will be reported at presentation.

## References

- [1] Masami Ando, Naoki Sunaguchi, Yongjin Sung, Daisuke Shimao, Jong-Ki Kim, Gang Li, Yoshifumi Suzuki, Tetsuya Yuasa, Kensaku Mori, Shu Ichihara, Rajiv Gupta, "Crystal-based X-ray Medical Imaging Using Synchrotron Radiation and Its Future Prospect", Chapter 8 in Application of Synchrotron Radiation, World Scientific Publisher, ed. Xinyi Zhang, Singapore