이름: 조효성/Hyosung Cho

직위: 교수/Professor

소속: 연세대학교 방사선융합공학과/Department of Radiation Convergence Engineering, Yonsei University

강연제목: 상용 엑스선 그리드를 이용한 암장 엑스선 영상화 기법 연구 /Study on dark-field x-ray imaging technique using a commercially available x-ray grid

Abstract: Dark-field x-ray imaging (DFXI) is an emerging technology that can be used to obtain microstructural information related to very small-angle x-ray scattering of a sample under investigation. Over the past decade, the grating-based DFXI technique has opened new avenues for x-ray imaging especially in medical and biomedical fields, showing diagnostic information that cannot be obtained using conventional x-ray techniques. However, the grating-based approach requires specialized high precision gratings and careful alignment. Further, fabricating large-area gratings remains a technical challenge, particularly for medical and industrial applications. In this study, we investigated a variant grating-based DFXI named single-grid DFXI technique. It is a single-exposure, non-interferometric method for the retrieval of dark-field images using conventional x-ray grid and x-ray source. To demonstrate the efficacy of the proposed method, we conducted an experiment on several samples containing low-density foreign bodies (e.g., wood, Styrofoam, plastic, etc.), using a table-top setup that primarily comprised of a microfocus x-ray source (20 m focal spot), a focused linear x-ray grid (strip densities in the range of 6.99–12.16 lines/mm), and a CMOS detector (49.5 m pixel dimension). More quantitative experimental results will be given in the presentation.

Brief Biosketch

2010 – present: Advanced Dental Imaging Research Center (VYsion), Director
2008 – 2009: The Korean Society of Radiology, President
2000 – present: Yonsei Univ., Dept. of Radiation Convergence Engineering, Professor
1998 – 2000: Johns Hopkins Univ., Physics Dept., Postdoctoral fellow
1997 – 1998: Lawrence Berkeley National Laboratory, Physics Division, Postdoctoral fellow
1991 – 1997: UC Berkeley, Dept. of Nuclear Engineering, PhD
1982 – 1988: Seoul National Univ., Dept. of Nuclear Engineering, BS & MS