

# DETECTION OF MICROCRACKS IN CONCRETE BY APPLYING CONTRAST RADIOGRAPHY

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## Summary of research

Motivated by the possibility of detecting microcracks in concrete using contrast radiography, which is a common tool in the medical field, Prof. Ohtsuka conducted studies and succeeded for the first time in the world in nondestructively detecting microcracks in reinforced concrete. He discovered that the compressive strength of concrete is closely related to the amount of the contrast medium absorbed in microcracks and voids in concrete, i.e., the attenuation ratio of the energy of irradiated X-rays as they pass through concrete. He developed techniques for estimating concrete strength and found that not only the strength but also the deterioration of concrete is quantitatively diagnosable by applying these techniques. His achievements are beginning to be applied at construction sites.

Prof. Ohtsuka's series of studies opened a new horizon in the study of concrete by applying creative ideas and studies to the evaluation of concrete strength and deterioration. These achievements not only contributed greatly to the scientific development of concrete engineering, but also can enhance the accuracy of deterioration analyses of concrete structures, which is urgently needed in the industry. His achievements have proven worthy of the Yoshida Award for excellent research work in concrete engineering.