

## **Yoshida Award (Research Accomplishment Section)**

### **RESEARCH ON CONTINUOUS FIBER-REINFORCED CONCRETE STRUCTURES**



**Dr. Kyuichi MARUYAMA**  
(Emeritus Professor of Nagaoka University of Technology)

Dr. Maruyama has made a great contribution to Japan's civil engineering sector in the fields of design, construction, and maintenance management of concrete structures. He has pursued research and study activities within the JSCE as a committee member, and has also played a leading role in the compilation of specifications and standards. In particular, he has done pioneering research into continuous fiber-reinforced concrete structures using various continuous fiber reinforcement materials such as carbon fibers and aramid fibers, both of which are new materials of great strength and durability.

Before the dawn of continuous fiber-reinforced concrete, Dr. Maruyama investigated the load-bearing mechanism of concrete members in which molded bars of continuous fiber reinforcement material acted as shear reinforcing bars. Then, when demand for a seismic reinforcement retrofitting method for reinforced concrete structures surged following the 1995 Hyogoken-Nanbu Earthquake, he carried out advanced research on the use of continuous fiber sheets as an external reinforcement for concrete, particularly concerning adhesion between fiber sheets and the concrete, which is the basis of the reinforcement effect. Recently, in a new application, he developed a seismic reinforcement method for bridge piers using continuous fiber ropes and has been engaged in systematic experiments to test it.

The results of Dr. Maruyama's research have been published in a number of papers. Dr. Maruyama also chaired the JSCE's Subcommittee on Continuous Fiber Sheet Repair and Reinforcement Research, where he played a leading role in compiling "Recommendations for Upgrading of Concrete Structures with Use of Continuous Fiber Sheets."

These achievements have been recognized as worthy of the Yoshida Award for Research Accomplishment.