

## International Workshop on Ceramic Science and Engineering in Sendai (IWCSE Sendai)

Ceramic science is an interdisciplinary and integrated research field. Without its development, human society cannot make progress. Although ceramics were anciently invented, modern ceramics are advancing rapidly, leading into new fields beyond the conventional image of ceramics. The properties of ceramic materials are strongly affected by processing, and thus a new processing can produce new materials which can trigger significant development of society. We have organized the joint conference (IWCSE Sendai) of ISAC-6, AOCF-7, and Thin Film Workshop in March 12 to 14, 2018 in Sendai, Japan. The invited lectures by fifty-five experts and thirty-two contributed papers provided valuable opportunity for cross-over discussion, interdisciplinary idea sharing and new collaboration to develop and establish the ceramic science and engineering.

The science and technology of ceramics are advancing rapidly, leading into new fields far beyond the conventional image of ceramics. Careful tailoring of micro- and nano-structures is yielding superior mechanical, chemical, and electrical properties. Engineering structural and functional ceramics are expected to find uses as key components in a variety of industrial applications from engines with high efficiency long-term durability to devices to maintain clean environments. The International Workshop on Ceramic Science and Engineering in Sendai (IWCSE Sendai), that is the ICC-IMR workshop, discussed on the advanced monolithic and composite ceramic materials for wide-ranged applications in conjunction with the Japan Society for the Promotion of Science (JSPS) and the Asia-Oceania Ceramic Federation (AOCF) and the Thin Film Society. The JSPS 124th Committee on Advanced Ceramics has been conducting a series of International Symposium on Advanced Ceramics (ISAC). Following the first symposium at Kurume, Japan in 1997 (ISAC-1), Shanghai, China in 2002 (ISAC-2), Singapore in 2006 (ISAC-3), Osaka, Japan in 2010 (ISAC-4), and Wuhan, China (ISAC-5), ISAC-6 was scheduled at Sendai because Tohoku University is one of the most advanced research institution for ceramics. The AOCF has also been conducting a series of international conferences at Osaka, Japan in 2005 (AOCF-1), at Daegu, Korea in 2006 (AOCF-2), at Lijiang, China in 2008 (AOCF-3), at Osaka, Japan in 2010 (AOCF-4), at Jeju, Korea in 2013 (AOCF-5), and at Guilin, China in 2015 (AOCF-6). The Thin Films Workshop is a series of workshop on thin film and surface science, focusing topics related to ceramic coatings. Since the materials science of ceramics is interdisciplinary research field, the ICC-IMR workshop was held with the ISAC-6, AOCF-7 and Thin Films Workshop 2018 on March 12<sup>th</sup> to 14<sup>th</sup> at Tohoku University in Sendai.

The 3-days technical program in this workshop include 87 papers in which 55 invited lectures were given by distinguished professors and experts on ceramics from US, UK, Germany, Italy, France, Ukraine, Slovak, Sweden, Brazil, Australia, Singapore, India, Thailand, China, Korea, Taiwan and Japan. The ICC-IMR workshop consisted of 18 sessions discussing on knowledge sharing of state-of-the-art research on advanced functional and structural ceramics with regards to basic material science and practical applications discussing on development of high strength ceramics, composites and porous materials; coating techniques to resist wear, erosion and tribological loadings; new processing of fiber, matrices, interfaces, CMCs; transparent materials; ultra high-temperature ceramics and ternary compounds; tribological behaviors and heat and corrosion resistances of various types of ceramic materials and coatings; developing thermal and environmental barrier coatings; joining and machining of ceramics and composites, mechanics and characterization techniques in order to establish interdisciplinary and international network of scientists leading the ceramic materials



Fig.1 A group photo of the ICC-IMR workshop

