Preface

The first International Conference on Porous Metals and Metallic Foams (MetFoam 1999) was held in Bremen, Germany, from 14 to 16 June, 1999, initiated by Professor John Banhart. This was followed by the 2nd Conference (MetFoam 2001) in Bremen, Germany (June 18-20, 2001), the 3rd Conference (MetFoam 2003) in Berlin, Germany (June 23-25, 2003), the 4th Conference (MetFoam 2005) in Kyoto, Japan (September 21-23, 2005), the 5th Conference (MetFoam 2007) in Montreal, Canada (September 5-7, 2007), the 6th Conference (MetFoam 2009) in Bratislava, Slovakia (September 2-4, 2009), the 7th Conference (MetFoam 2011) in Busan, Korea (September 18-21, 2011), the 8th Conference (MetFoam 2013) in North Carolina State, USA (June 23-26, 2013), and the 9th Conference (MetFoam 2015) in Barcelona, Spain (31 August - 2 September 2015). The 10th Conference (MetFoam 2017) was held in Nanjing, China, from 14 to 17 September, 2017.

MetFoam 2017 had four main themes: (1) fabrication of porous metals and metallic foams by both conventional and novel methods including additive manufacturing; (2) nanoporous structures; (3) application of porous metal materials, and (4) properties of porous metal materials. The conference attracted over 200 participants from 16 countries or regions and had 105 oral presentations including 8 plenary speeches plus 67 informative posters (4 best poster papers). This conference book contained 53 peer-reviewed papers. Together they reflect about a third of the topics discussed at the conference.

On behalf of the Organizing Committee of MetFoam 2017 and my co-editors of this conference book, I would like to sincerely thank all the reviewers, international advisory board members, steering committee members, conference secretaries, sponsors and volunteers who made this conference a great success.

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June 1, 2018

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Introduction to State Key Laboratory of Porous Metal Materials

The State Key Laboratory of Porous Metal Materials was approved by the Ministry of Science and Technology of the People's Republic of China in 2007. It focuses on applied fundamental research of high performance porous metal materials and associated key technologies. The laboratory is the largest research group in porous metal materials in China, with expertise in all aspects of porous metal materials.

The laboratory has 72 members of staff and 50 of them are permanent researchers, including 1 Recipient of State Council Special Allowance, 1 National Expert with Outstanding Contributions, 1 Distinguished SanQin Scholar of Shaanxi Province, 1 Young and Middle-aged Leading Academic of Shaanxi Province, 8 Junior Scientists of Shaanxi Province,11 professors and 23 senior engineers.

Four main research fields of the laboratory:

(1) Porous metal materials by powder sintering

We can produce a variety of porous metal powder components and filtering metal membrane materials with different shapes. The materials have been successfully applied to polysilicon, nonferrous metallurgy, coal chemical industry and other fields for purification of hot and corrosive dusty gas.

(2) Porous metal materials by fiber sintering and other methods

We focus on the preparation and application of porous metal fiber materials, nano-porous materials, metal foams and porous-dense composite materials.

(3) Porous metal materials by additive manufacturing

We designed and manufactured the first selective electron beam melting (SEBM) system in China (protected by six patents). A variety of porous metal components produced by SEBM have been successfully used in the aerospace and medicine.

(4) Design, evaluation and application of porous metal materials

The pore structure and properties of porous metal materials can be designed, prepared or evaluated by us, and the laboratory has 103 pieces of research equipment, such as metal powder gas atomization equipment, powder rolling facility, selective electron beam melting machine, liquid-solid separation platform, gas-solid separation platform, and so on.

Since inception, our research outcomes have resulted in (1) the establishment of 3 high-tech companies (1 listed); (2) 16 national, provincial and ministerial awards; (3) 85 authorized patents; and (4) 420 academic papers and 5 academic monographs.