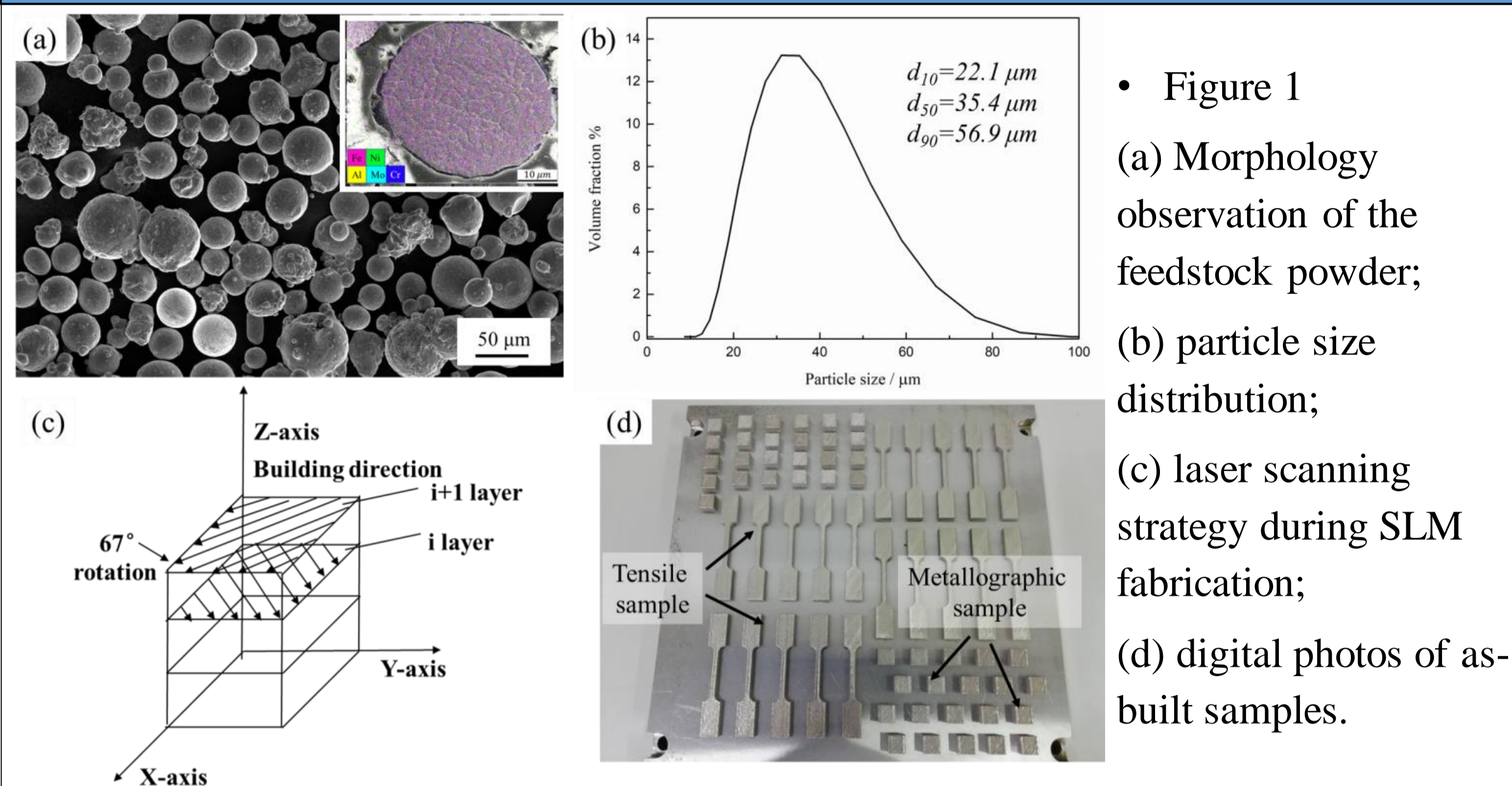


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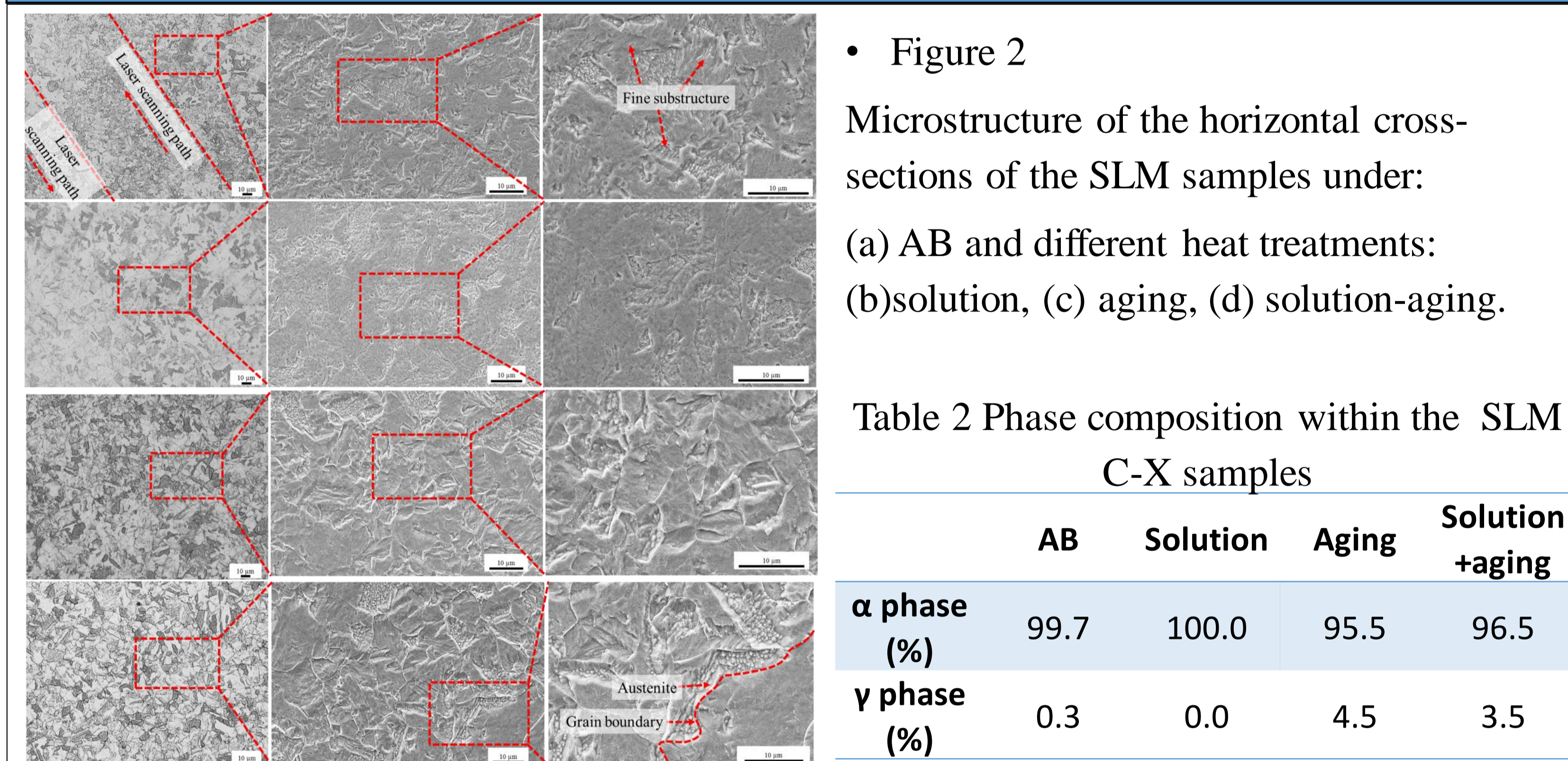
1: Shanghai University, 2: Guangdong Institute of New Materials, 3: Univ. Bourgogne Franche-Comté

Introduction: Different from the traditional subtraction manufacturing, the metallic additive manufacturing (AM) is a novel technology that joins materials to generate three-dimensional parts directly from CAD models based on the discrete-stacking principle. In this work, the systematic studies were made on the microstructure characteristics and mechanical performance of SLM C-X stainless steel under different conditions. Profound discussion was made to enhance the understanding of relationship between the underlying strengthening mechanism and microstructural evolution of SLM C-X steels.

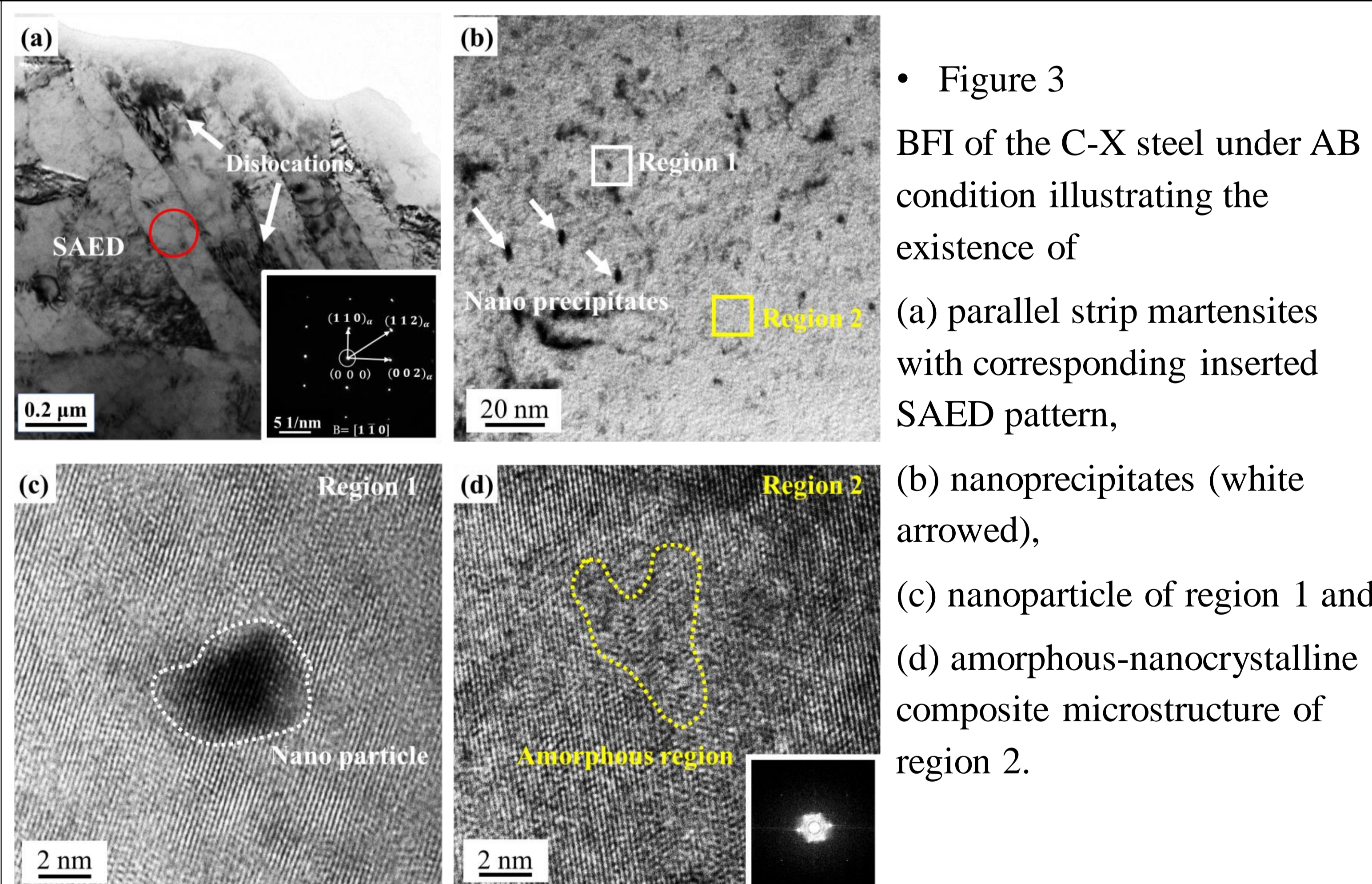
SLM fabrication procedure



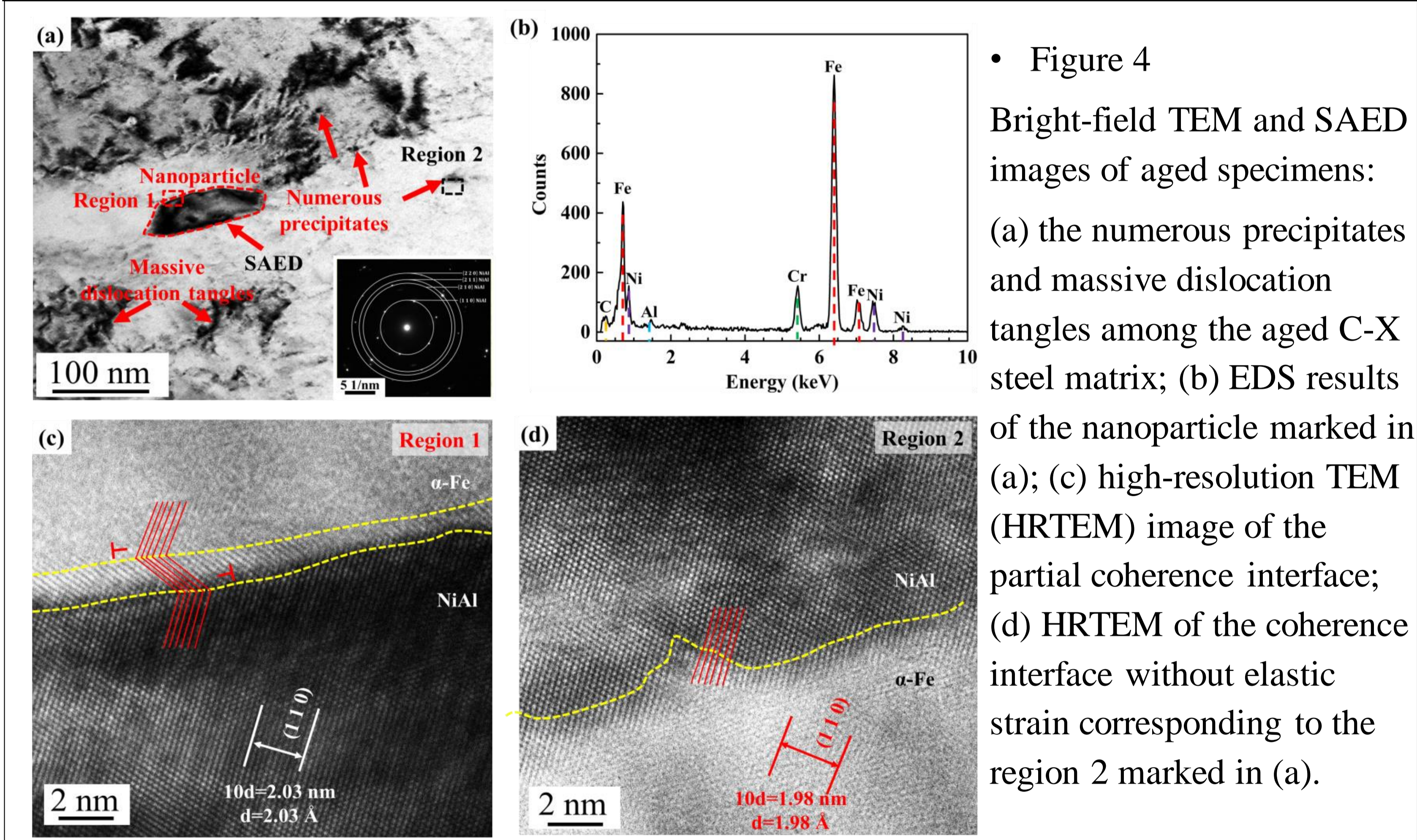
Microstructure observation by OM and SEM



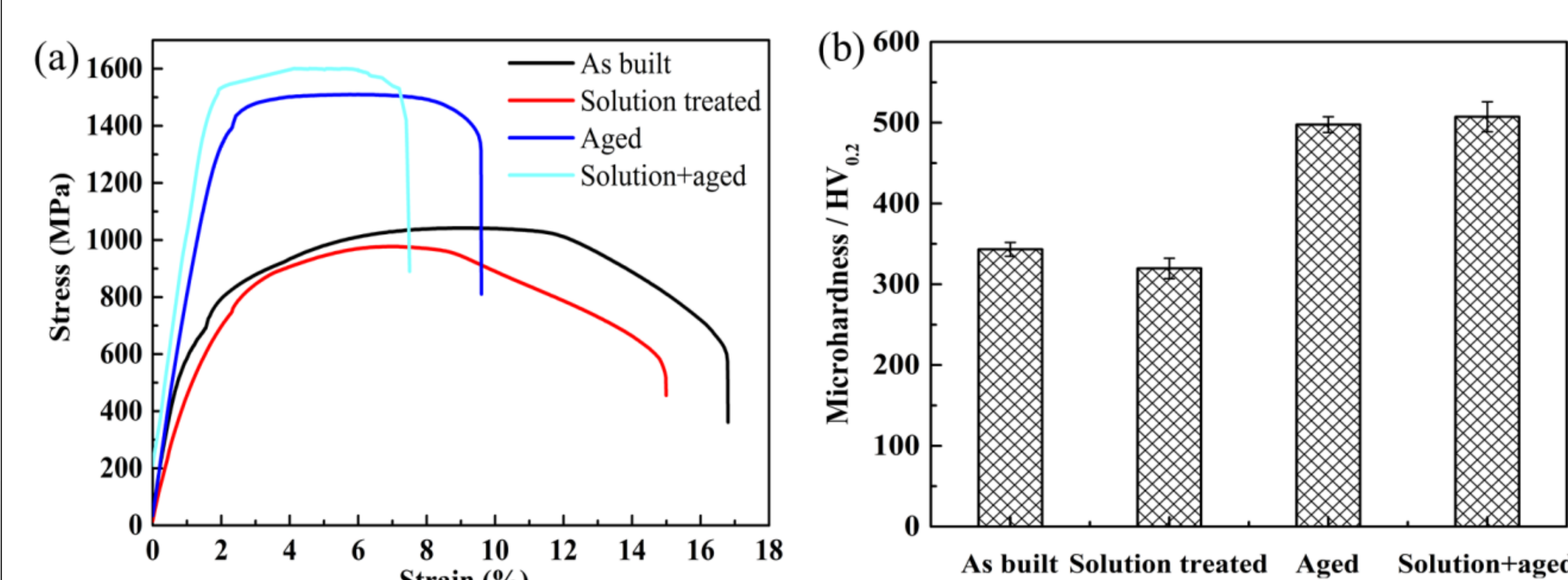
TEM observation on the as-built sample



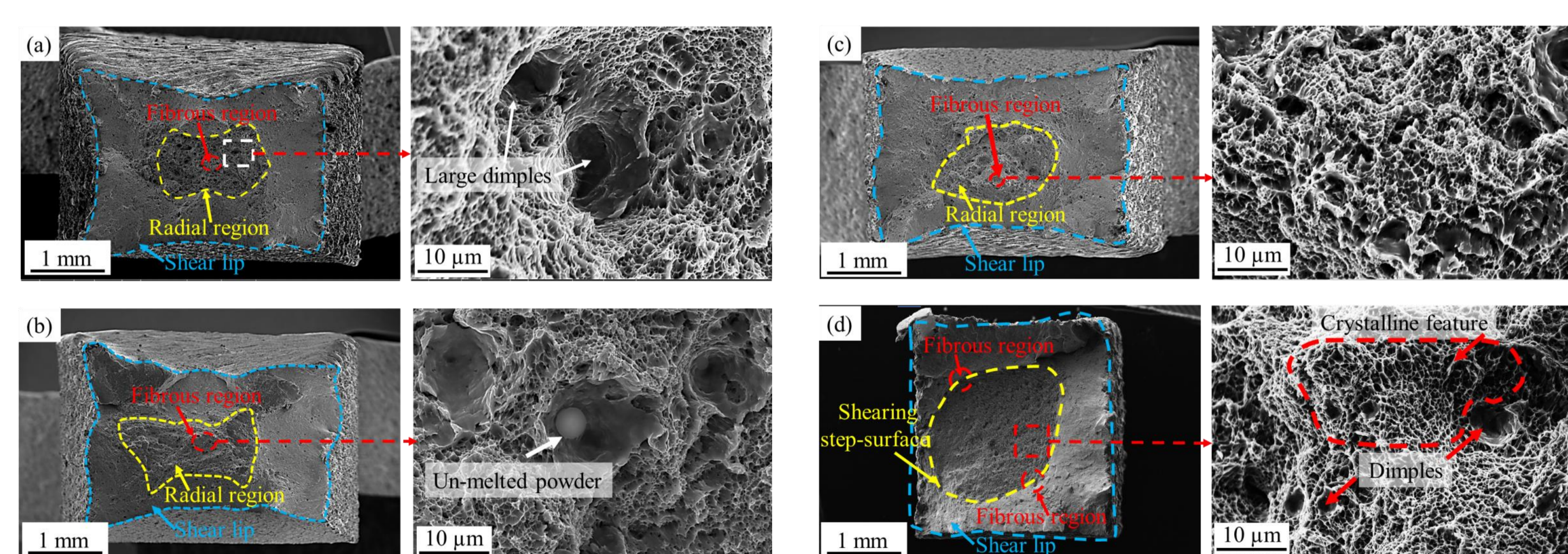
TEM observation on the heat-treated sample



Tensile properties, microhardness and Fracture observation



• Figure 5 Mechanical properties of the C-X steel SLM parts after different heat treatment: (a) representative engineering stress-strain curves; (b) average microhardness.



• Figure 6 Fracture microstructure of the C-X steel SLM parts under conditions of: (a) as-built, (b) solution; (c) aging; (d) solution-aging.