

横浜国立大学ナノリサーチクラブ講演会

HIGH ENTROPY ALLOYS

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Universidade Federal da Paraíba (Brazil)

日時：3月11日（水）15:00-16:30

場所：生産工学科棟4階 421材料輪講室

連絡先：ナノリサーチクラブ世話役 廣澤渉一

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ABSTRACT

The high entropy alloys were created by combining at least five constituents leading to a fcc or bcc solid solution. Depending of the chemical elements the high entropy of mixing can favors the simple cubic structure rather than the formation of intermetallics compounds. The alloys were tailored by calculating the misfit between the atomic radii of the elements and also the total heat of mixing. Several alloys were arc melted and their microstructure were investigated by means of scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS); and X-ray diffraction (XRD) and transmission electron microscopy (TEM). The presentation will focus (i) to identify the influence of each elements on the stabilization of the simple cubic structure (ii) to tailor Al based light weight alloys with high strength for aeronautical application (iii) to understand the formation of the final microstructure to optimized the heat treatment. The results showed that Al and Cr elements enhance the bcc phase formation. Cu addition tends to segregate at grain boundary and improves the plasticity. Cr addition tends to form a liquid phase separation while Ni suppress the formation of the stable immiscibility gap.