東京大学グローバルCOEプログラム　機械システム・イノベーション国際拠点

東京大学 THE UNIVERSITY OF TOKYO

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Icosahedral Order: The Link between Structurally Complex Intermetallics, Quasicrystals and Metallic Glasses

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会場：東京大学工学部9号館1F 大会議室

要旨

The seminal experiments of Pol Duwez in 1960 laid the foundation for our quest for synthesizing metastable structures. The progress in the succeeding two decades has been admirably summarized by David Turnbull in his 1980 Campbell Memorial Lecture. The excitement of creating new phases has continued unabated in the past three decades. In this lecture we focus on the icosahedral order interlinking many of the novel atomic configurations in metallics drawing examples from our own contributions.

With an explosion in the number of compositions forming BMG, their classification becomes important, which will help us understand the relationship amongst the various BMG. Following the standard classification scheme based on compositions, Pettifor's approach using Mendeleev number and the importance of bond orbitals in the classification of BMG is highlighted.

This classification of BMGs will be compared with the classification of four types of quasicrystals using Mendeleev number.

An interesting example of Frank's cubic phase in a complex intermetallic will be discussed to bring the occurrence of icosahedral order, a subject to which F C Frank made several spectacular contributions.

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