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Order disorder transitions in Fe-based alloys

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The order-disorder transition in Fe-rich Fe-Al alloys was first reported in 1932 by Bradley and Jay. Since then, much effort has been put into understanding the order-disorder transformation in different systems, particularly in the Fe-Al, Fe-Si and Fe-Al-Si systems as the typical case of order-disorder transitions. Two ordered structures with stoichiometric compositions- Fe (Al-Si) and $\text{Fe}_3(\text{Al-Si})$, can be formed from the bcc phase alloys and these structures exist over a wide range of composition and temperature. The existence of the ordered phases 1 (Fe_3Al and Fe_3Si which have DO_3 or BiF_3 type order) and phase 2 (Fe-Al and Fe-Si which have B_2 or Cs-Cl type order) along the $\text{Fe}_3\text{Al-Fe}_3\text{Si}$ section was studied by means of various techniques in order to understand the nature and the existence of this transitions such as high temperature

X-ray diffraction and recording the disappearance of DO_3 superlattice and reflections as a function of temperature and composition. Further works have been carried out in this field and led to the understanding of these type of transitions.

Speaker Biography

Boulouma Amor is an assistant professor at the ESTI (French abbreviation of College of industrial technologies) of Annaba (Algeria) since 2006, has completed his PhD on "Arc melted Fe-Si-Al alloys" in 2018 from the University of Annaba (Algeria) and became an associate professor there. He has two published papers about Al-Fe-Si alloys and made over 15 contributions in international conferences on different themes such as Synthesis of advanced materials from Al-Fe-Si and Si-C alloys by arc melting and mechanical alloying; Mechanical and magnetic properties of Fe-Si-Al sendust alloys; Synthesis of composite materials from Al- Fe_2O_3 reactions, etc.

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