Bando 1_2025 - Quesito per Prova Orale

1. Discuss a type of crystalline defect typically found in nanomaterials. How do you characterize it with electron microscopy, and what influence does it have on funcitonal properties.

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2. Can you outline the complementary roles of EELS and EDX, and give an example of a situation where one is preferable to the other?

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3. How would you decide whether to use diffraction-based analysis or high-resolution imaging to study a particular structural feature?

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4. You have to understand defects in boron nitride. What are your considerations for choosing a TEM-based technique and experimental conditions?

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5. You have to characterise a multi-layer of InGaAs on GaAs. What are your considerations for choosing a TEM-based technique and experimental conditions? What information can you obtain?

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6. You have to obtain information on a polycrystalline matrix (for example Ti6Al4V) with oxide precipitates. What are your considerations for choosing a TEM-based technique and experimental conditions

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7. You have to study a film of titanium dioxide with graphene grown on top. What techniques would you use to obtain relevant information and what insights could you gain?