Introduction to Materials Science and Engineering
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Lecture – 125
Metastable precipitates

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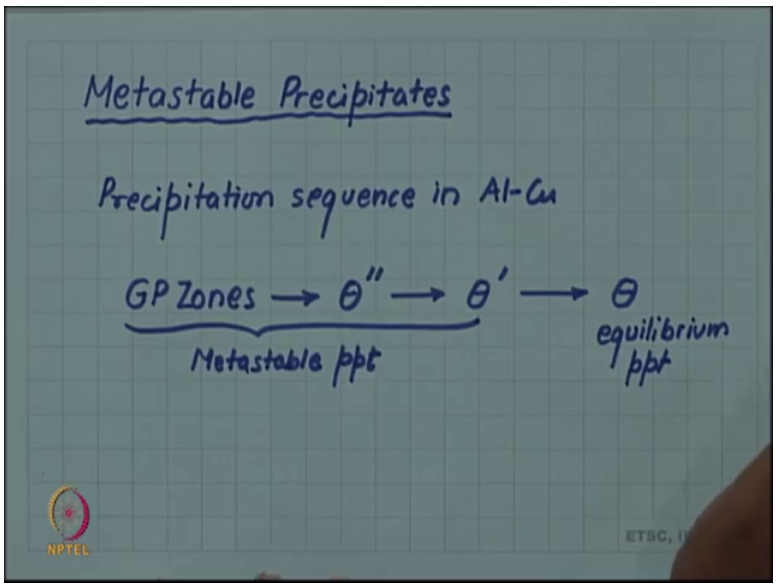

One thing which you have to keep in mind and which I have not been telling correctly in those past slide is that I was using equilibrium precipitate as an example for hardening but in reality particularly in aluminium copper alloy, it is not the equilibrium precipitate but some Metastable Precipitate which really cause the hardening.

So, the precipitation sequences; precipitation sequence in aluminium copper alloy is that initially some precipitate known as GP Zones form which then transform into theta double prime, then they transform into theta prime and finally, only they form theta which is the equilibrium precipitate.

Whereas, all these 3 are Metastable Precipitate and in fact, real cause of hardening are these Metastable Precipitate, it is the initial formation of GP zones which leads to hardening. However, we do not want to get into the details of this in the present course. I have assumed, but wrongly. So, that it theta was the precipitate which was causing equilibrium, but the basic principles which we taught about that how the precipitate causes obstruction in the motion of dislocation; how they come and how they are related

to the phase diagram and the TTT diagram; some of those principles are applicable to the Metastable Precipitate formation and the hardening mechanism which will be true.