Ellipsometry and Its Role in Science by James Blee

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Every film has its dielectric property. This is a property that is seen when electric field is applied and the dielectric is an electrical insulator which can be polarized by it. Ellipsometry on the other hand is an optical method or technique which is used to investigate the dielectric properties of a very thin film.

The technique called ellipsometry is used in many fields today. Especially in physics, this has a major role to play. It is also used in biology, microelectronic and many more. Not only in basic research but also in the industrial techniques too. As this is an optical technique this is non destructive and at the same time a contact less technique.

Now how does this happen?

Every sample reflects a bit of light. Now ellipsometry can obtain information about the change of polarization of any sample that is thinner than the waves of the lights. Polarization is the property of the types of waves coming out of light which explains the orientation of their oscillation. Ellipsometry can not only obtain the information about a thin sample but it reaches to the single atomic layer of the sample. This is the reason why this is used to determine fundamental physics property such as chemical composition, morphology, crystal quality and even electric conductivity.

The name ellipsometry suggests that is related to something elliptic in nature and it is so because general state of polarization is elliptic in nature. This is a technique that is being used in science for a long time now. This technique is quite an interesting one for the researchers in medicine and biology too. ellipsometer is useful whenever there is a reflection. As there is no effect on the property of the sample after the technique is used this is considered one of the safest techniques.

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