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## Magneto-optical and optical properties of Fe-Au disordered alloy films around the structural transformation

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Study on the optical and magneto-optical properties of Fe-Au alloy films and on the influence of the structural fcc-bcc transformation on the electronic structure of the alloys are achieved. Fe-Au alloys are known to exhibit an fcc-bcc structural transformation near the Fe-rich side of the system. The magneto-optical (equatorial Kerr effect : EKE) and optical properties of  $\text{Fe}_{1-x}\text{Au}_x$  ( $0.10 < x < 0.93$ ) were investigated in the 0.5-5.0eV energy range. The x-ray diffraction study shows the structural bcc-fcc transformation near 80at.%. Noticeable changes in the optical properties of the alloys result from the structural bcc-fcc transformation :  $\text{Fe}_{1-x}\text{Au}_x$  alloys with the bcc-phase have an absorption peak at 2.1-2.2eV (which comes from the Fe peak at 2.4eV) in the optical conductivity spectra. This absorption peak disappears in the fcc-phase. The shape and intensity of the EKE spectra as well as the field dependence of the magneto-optical response are also significantly changed. The first-principles calculations on the electronic structure and the optical properties of the Au-Fe alloys are used to explain the obtained results.