

## Conduction Electron States and Ferromagnetism of Electron-doped EuO

M. Takahashi

Kanagawa Institute of Technology, Atsugi, Japan

To study the conduction electron states and ferromagnetism of electron-doped EuO theoretically, we have applied two approximations to the  $s$ - $f$  model and compared their results: virtual crystal approximation (VCA) and dynamical coherent potential approximation (dynamical CPA). The results of both approximations explain the anomalous magnetization curve experimentally observed in Gd-doped EuO and/or Eu-rich EuO with a low electron density, while only the result of dynamical CPA can explain the electron-density dependence of the Curie temperature  $T_C$ . The  $T_C$  calculated by VCA shows the monotonous increase with electron density, while the  $T_C$  calculated by dynamical CPA shows a maximum for a certain electron density. The mechanism of  $T_C$  increase is also discussed.