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Optical properties in the visible range of Co clusters capped by Pd under hydrogen[1] A.L. CABRERA, J.I. AVILA, Facultad de Fisica, Pontificia Universidad Catolica de Chile, C.P. ROMERO, M.J. VAN BAEL, P. LIEVENS, Laboratorium voor Vaste-Stoffysica en Magnetisme, Katholieke Universiteit Leuven
— Co clusters with mean size of 1.8 nm were deposited to form a 25 nm thick cluster assembled film on glass, capped by a continuous 15 nm Pd film. The light transmission and reflection, in the visible range (400 to 1000 nm), were measured when the sample was exposed to different hydrogen pressures up to 120 Torr. Measurements on 15 nm continuous Pd film were done for comparison. Electrical resistance of the films was also measured as an independent parameter to determine hydrogen absorption by the samples. In both samples the transmission and resistance of the films increase, reaching saturation at 30 Torr hydrogen pressure. Increase of the light transmission and electrical resistance on the pure Pd film indicates absorption of hydrogen in the bulk of the film. Smaller relative change of the resistance and reflection of light on the Co cluster sample capped by Pd indicates that hydrogen absorption is limited to the Pd capping layer only. This work is supported by the Fund for Scientific Research-Flanders (FWO), by the Flemish Concerted Action (GOA), and by the Belgian Interuniversity Poles of Attraction (IAP) programs.

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A. L. Cabrera
Pontificia Universidad Catolica

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