Electronic Structure of Gadolinium and Dysprosium Using Compton Scattering Technique

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In this paper we present the first ever measured Compton profiles of polycrystalline gadolinium and dysprosium using 661.65 keV gamma-rays. The Compton data are compared with renormalized-free-atom (RFA) and free-electron model profiles. In both cases the RFA model (with e^- - e^- correlation) gives a better agreement with the experiment. The hybridization effects of s-, p-, d-, and f-electrons are discussed, using the first derivatives of the Compton profiles. We also report the cohesive energy of both samples, computed from the RFA calculations. – PACS numbers: 13.60.F, 71.15.Nc, 78.70.-g, 78.70.Ck

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