

**Crystal Data:** Hexagonal. *Point Group:* 6/m 2/m 2/m. As botryoidal porous grains to 110  $\mu\text{m}$ , intergrown with other PGM and intermetallic phases.

**Physical Properties:** *Cleavage:* None. *Fracture:* n.d. *Tenacity:* n.d. *D(meas.):* n.d. *D(calc.):* 11.33(1) *Hardness:* n.d. *VHN:* n.d.

**Optical Properties:** Opaque. *Color:* Gray to gray-black, white to slightly cream in reflected light. *Streak:* n.d. *Luster:* Metallic. *Anisotropy:* Very weak. *Optical Class:* n.d.

*R =* (470) 63.8, (546) 65.9, (589) 67.0, (650) 68.0

**Cell Data:** *Space Group:*  $P6_3/mmc$ . [by analogy in the osmium group.] *a =* 2.6941(4)  
*c =* 4.2731(6) *Z =* 2

**X-ray Powder Pattern:** Loma Peguera, Dominican Republic.  
2.046 (100), 2.330 (50), 1.3470 (40), 1.2155 (40), 2.136 (30), 1.576 (30), 1.1391 (20)

<b>Chemistry:</b>	(1)
Ni	27.91
Fe	19.94
Ir	43.78
Pt	6.98
Co	0.55
Cu	0.43
Ru	0.50
Rh	0.74
Os	0.67
Total	101.51

(1) Loma Peguera, Dominican Republic; average of 42 electron microprobe analyses; corresponds to  $(\text{Ni}_{0.421}\text{Fe}_{0.316}\text{Ir}_{0.202}\text{Pt}_{0.032}\text{Co}_{0.008}\text{Cu}_{0.006}\text{Rh}_{0.006}\text{Ru}_{0.004}\text{Os}_{0.003})_{\Sigma=1}$ .

**Mineral Group:** Osmium group.

**Occurrence:** Of probable secondary origin, formed at low temperatures during post-magmatic processes, such as serpentinization and/or lateritization. Found in heavy mineral concentrates from podiform chromitite deposits in ophiolitic rocks.

**Association:** Hexaferrum, ferrian chromite, chlorite-group minerals, serpentine-group minerals, awaruite, irarsite, laurite, native Ru, zaccariniite and unidentified species including Ru-Os-Ir-Fe and Pt-Ni-Fe-Ir compounds,  $\text{Pt}(\text{Ni,Fe})_3$ ,  $(\text{Fe,Ru,Ni,Os,Ir,Co})_2\text{S}$ .

**Distribution:** From Loma Peguera, Dominican Republic.

**Name:** Honors Professor Giorgio Garuti (b. 1945), University of Leoben, Austria, for his contributions to the understanding of the mineralogy of platinum-group elements.

**Type Material:** Mineralogical Museum of Leoben, Austria (# 8241).

**References:** (1) McDonald, A.M., J.A. Proenza, F. Zaccarini, N.S. Rudashevsky, L.J. Cabri, C.J. Stanley, V.N. Rudashevsky, J.C. Melgarejo, J.F. Lewis, F. Longo, and R.J. Bakker (2010) Garutiite, (Ni,Fe,Ir), a new hexagonal polymorph of native Ni from Loma Peguera, Dominican Republic. *Eur. J. Mineral.*, 22, 293-304. (2) (2011) *Amer. Mineral.*, 96, 941-942 (abs. ref. 1).