Rodolicoite $Fe^{3+}PO_4$

Crystal Data: Hexagonal. *Point Group:* 32. In microcrystalline nodules, intimately mixed with grattarolaite, as crystallites to < 1000 Å.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.04

Optical Properties: Opaque. *Color:* Reddish brown. *Streak:* Brown. *Luster:* Greasy. *Optical Class:* Uniaxial. ω = n.d. ϵ = n.d.

Cell Data: *Space Group:* $P3_121$ (synthetic). $a = 5.048(3)$ $c = 11.215(8)$ Z = 3

X-ray Powder Pattern: Synthetic.
3.445 (100), 4.360 (19), 2.362 (14), 1.8846 (12), 2.180 (10), 1.4214 (10)

Chemistry: (1) Due to the tiny particle sizes (average about 260 Å) only bulk composition of the mixture could be determined; this is compatible with a composition of $Fe_{1.04}P_{0.96}O_{4.00}$; the identity of the mineral rests also on its X-ray powder pattern compared to synthetic material.

Occurrence: Very rare, in microcrystalline nodules in lignite beds which appear to have naturally burned.

Association: Grattarolaite, heterosite.

Distribution: From the Castelnuovo mine, Santa Barbara lignite district, 30 km southeast of Florence, Florence, Italy.

Name: Honoring Francesco Rodolico (1905–1988), Professor of Mineralogy, Florence University, Florence, Italy.

Type Material: Museum of Natural History, Florence University, Florence, Italy, 2087/RI.

References: (1) Cipriani, C., M. Mellini, G. Pratesi, and C. Viti (1997) Rodolicoite and grattarolaite, two new phosphate minerals from Santa Barbara mine, Italy. Eur. J. Mineral., 9, 1101–1106. (2) (1998) Amer. Mineral., 83, 654 (abs. ref. 1). (3) Arnold, H. (1986) Crystal structure of $FePO_4$ at 294 and 20 K. Zeits. Krist., 177, 139–142.