**Nickelphosphide**

**Crystal Data:** Tetragonal. *Point Group:* 4. As isometric grains, to 30 μm, in kamacite lamellae and as xenomorphic elongate inclusions, to 200 μm, in kamacite spindles.


**Optical Properties:** Opaque. *Color:* In reflected light, white with a pink-yellow tint. *Luster:* Metallic. *Optical Class:* Biaxial (+). No anisotropy observed in air, but weakly anisotropic in yellowish pinkish colors in oil (*n* = 1.515). No bireflectance. R₁-R₂: (480) 44.6-43.0, (560) 48.3-46.8, (580) 49.1-47.6, (660) 52.5-51.3

**Cell Data:** *Space Group:* I₄. *a* = 8.9546(1) 1 *c* = 4.38714(8) 1 Z = 8

**X-ray Powder Pattern:** Synthetic. 2.17 (100), 1.995 (70), 2.13 (50), 2.08 (50), 2.48 (20), 2.01 (20)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe</td>
<td>33.4</td>
<td>35.3</td>
</tr>
<tr>
<td>Ni</td>
<td>52.9</td>
<td>49.6</td>
</tr>
<tr>
<td>Co</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>P</td>
<td>14.6</td>
<td>15.3</td>
</tr>
<tr>
<td>Total</td>
<td>100.9</td>
<td>100.6</td>
</tr>
</tbody>
</table>

(1) Butler meteorite; electron microprobe analysis; corresponding to (Ni₁.₈₃Fe₁.₂₁)₁₂₋₃₀P₀.₉₆.  
(2) Dö.; electron microprobe analysis; corresponding to (Ni₁.₇₁Fe₁.₂₅Co₀.₀₁)₁₂₋₃₀P₁.₀₀.

**Polymorphism & Series:** Solid solution series with Fe₃P.

**Occurrence:** In meteorites.

**Association:** Kamacite, taenite, carlsbergite, schreibersite, barringerite (Butler); allabogdanite (Onello).

**Distribution:** In iron meteorites: Butler [TL], Cañon Diablo, Carlton, Edmonton (Kentucky), Kenton County, Lenarto, Monahans, Oktibbeha County; also, in the Efremovka carbonaceous chondrite, the Onello ataxite, and the Vicenice octahedrite.

**Name:** Alludes to the composition.

**Type Material:** Mining Museum, Saint Petersburg Mining Institute, Russia.

**References:**  