

Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$. As thin lamellae, 3–15 μm wide, alternating with graphite.

Physical Properties: Hardness = Slightly harder than graphite [1–2]. VHN = n.d.
D(meas.) = n.d. D(calc.) = 3.43

Optical Properties: Opaque. *Color:* Black.

R_1 – R_2 : n.d.

Cell Data: *Space Group:* $P6/mmm$. $a = 8.948$ $c = 14.078$ $Z = 168$

X-ray Powder Pattern: Nördlinger Ries crater, Germany.

4.47 (100), 4.26 (100), 4.12 (80), 3.03 (60), 2.55 (60), 2.28 (60), 3.71 (40)

Chemistry:	(1)
	C 99.5
	Si < 0.5
	Cl < 0.5
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	Total 100.0

(1) Nördlinger Ries crater, Germany; by electron microprobe, grain containing 35% chaoite.

Polymorphism & Series: Polymorphous with diamond, graphite, and lonsdaleite.

Occurrence: In shock-metamorphosed graphite gneisses and meteorites.

Association: Graphite, zircon, rutile, pseudobrookite, magnetite, nickeliferous pyrrhotite, baddeleyite.

Distribution: From Mottingen, in the Nördlinger Ries crater, Bavaria, Germany. In the Goalpara [??Goalpur??D8??ck??] and Dyalpur achondrite meteorites. [Novo Urei stony meteorite??addbutckname,type??]

Name: For Edward Ching-Te Chao (1919–), Chinese-American petrologist with the U.S. Geological Survey, Washington, D.C, USA.

Type Material: n.d.

References: (1) El Goresy, A. and G. Donnay (1968) A new allotriomorphic form of carbon from the Ries Crater. *Science*, 161, 363–364. (2) (1969) *Amer. Mineral.*, 54, 326 (abs. ref. 1). (3) El Goresy, A. (1969) Eine neue Kohlenstoff-Modifikation aus dem Nördlinger Ries. *Naturwissenschaften*, 56, 493–494 (in German). (4) (1970) *Amer. Mineral.*, 55, 1067 (abs. ref. 3). (5) Smith, P.P.K. and P.R. Buseck (1982) Carbyne forms of carbon: do they exist? *Science*, 216, 984–986. (6) (1983) *Amer. Mineral.*, 68, 1251 (abs. ref. 5). (7) Sobolev, V.V., V.Y. Slobodskoy, S.N. Selyukov, and A.A. Udoyev (1986) Some conversions of chaoite to other carbon phases. *Zap. Vses. Mineral. Obshch.*, 115, 218–221 (in Russian).