Addibischoffite $Ca_2(Al,Mg,V,Ti)_6(Al,Si)_6O_{20}$

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As an irregular mass to 9 μm.

Physical Properties: *Cleavage:* n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.41

Optical Properties: *Color*: n.d. *Luster*: n.d.
Optical Class: n.d.

Cell Data: *Space Group: P*$\bar{1}$. a = 10.367 b = 10.756 c = 8.895 α = 106.0° β = 96.0° γ = 124.7° Z = 2

X-ray Powder Pattern: Calculated pattern.
2.544 (100), 2.089 (83), 2.541 (78), 2.104 (78), 2.54 (71), 2.683 (66), 2.937 (59)

Chemistry:	(1)	(2)
Al_2O_3	44.63	84.51
CaO	15.36	15.49
SiO_2	14.62	
V_2O_3	10.64	
MgO	9.13	
Ti_2O_3	4.70	
FeO	0.46	.
Total	99.55	100.00

(1) Acfer 214 CH3 carbonaceous chondrite; by electron microprobe, average of 6 analyses; corresponds to $Ca_{2.00}(Al_{2.55}Mg_{1.73}V^{3+}_{1.08}Ti^{3+}_{0.50}Ca_{0.09}Fe^{2+}_{0.05})_{\Sigma=6.01}(Al_{4.14}Si_{1.86})_{\Sigma=6.00}O_{20}$.
(2) $Ca_2Al_6Al_6O_{20}$.

Occurrence: In the core of a Ca-Al-rich inclusion (CAI) in the Acfer 214 CH3 carbonaceous chondrite meteorite, presumably a refractory phase from the solar nebula.

Association: Hibonite, perovskite, kushiroite, Ti-kushiroite, spinel, melilite, anorthite, FeNi-metal.

Distribution: From the Acfer 214 CH3 carbonaceous chondrite meteorite.

Name: Honors Addi Bischoff (b. 1955), cosmochemist at University of Münster, Germany, for his many contributions to the mineralogy of carbonaceous chondrites, including CAIs in CH chondrites.

Type Material: G.J. Wasserburg Meteorite Collection, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, USA (Acfer 214-1580).

References: (1) Chi Ma, A.N. Krot, and K. Nagashima (2017) Addibischoffite, $Ca_2Al_6Al_6O_{20}$, a new calcium aluminate mineral from the Acfer 214 CH carbonaceous chondrite: A new refractory phase from the solar nebula. Amer. Mineral., 102, 1556-1560.