Mesolite

\[ \text{Na}_2\text{Ca}_2\text{Al}_6\text{Si}_9\text{O}_{30} \cdot 8\text{H}_2\text{O} \]

Crystal Data: Orthorhombic. Point Group: \( \text{mm}2 \). As prismatic crystals, elongated \( \parallel [001] \), to 20 cm; commonly in hairlike tufts and aggregates of fibers; divergent, radiating compact masses; in fibrous stalactites; porcelaneous, massive. Twinning: Characteristically twinned on \{010\} or \{100\}.

Physical Properties: Cleavage: \{110\}, \{1\overline{1}0\}, perfect. Fracture: Uneven. Tenacity: Brittle, but compact masses are tough. Hardness = 5 D(meas.) = 2.26 D(calc.) = 2.27 May exhibit a small pyroelectric effect; piezoelectric.

Optical Properties: Transparent to translucent, opaque. Color: Colorless, white, gray, yellowish; in thin section, colorless. Luster: Vitreous, silky when fibrous. Optical Class: Biaxial (+). Orientation: \( X \wedge c \approx 8^\circ; Z = b \). Dispersion: \( r > v \), strong. \( \alpha = 1.5048 \quad \beta = 1.5050 \quad \gamma = 1.5053 \quad 2V(\text{meas.}) = \sim 80^\circ \)

Cell Data: Space Group: \( \text{Fdd}2 \). \( a = 18.4049(8) \quad b = 56.655(6) \quad c = 6.5443(4) \quad Z = 8 \)

X-ray Powder Pattern: Harbabkhandi, Iran. 6.585 (100), 2.857 (56), 2.885 (55), 4.715 (49), 5.858 (38), 4.196 (32), 4.600 (29)

Chemistry:

\[
\begin{align*}
\text{SiO}_2 & \quad 46.98 \\
\text{Al}_2\text{O}_3 & \quad 26.43 \\
\text{CaO} & \quad 10.06 \\
\text{Na}_2\text{O} & \quad 4.57 \\
\text{K}_2\text{O} & \quad 0.05 \\
\text{H}_2\text{O} & \quad 11.94 \\
\text{Total} & \quad 100.03
\end{align*}
\]

(1) Syhadree Mountains, Bombay, India; corresponds to \( \text{Na}_{1.70}\text{K}_{0.01}\Sigma=1.71\text{Ca}_{2.07}\text{Al}_{5.99} \text{Si}_{9.04}\text{O}_{30} \cdot 7.66\text{H}_2\text{O} \).

Mineral Group: Zeolite group.

Occurrence: In cavities of volcanic rocks, typically basalt, also in andesites, porphyries, and hydrothermal veins.

Association: Natrolite, scolecite, other zeolites, calcite.

Distribution: Many localities, but only a few provide large crystals or rich masses. On North Mountain and Gates Mountain, and at Cape Blomiden, Nova Scotia, Canada. In the USA, on Table Mountain, Jefferson Co., Colorado; large crystals from Skookumchuck Dam, near Buoda, Thurston Co., Washington. In Oregon, from Goble, Columbia Co.; near Dollar, and on Shotgun Creek, Linn Co.; Springfield, Lane Co.; Ritter Hot Springs, Grant Co., and elsewhere. From Puy de Marman, near Veyre, Puy-de-Dôme, France. In Iceland, from the Breiddalur-Berufjord area. On Naalsoy, Streymoy, and others of the Faeroe Islands. Exceptional crystals from the Pashan Hills and other localities around Poona, Maharashtra, India.

Name: From the Greek for middle, alluding to its composition intermediate between natrolite and scolecite.