

# FLUIDS & MATERIALS

Unit 18 Dr. John P. Cise, Professor of Physics,

Austin Com. College, 1212 Rio Grande St., Austin Tx. 78701 [jpcise@austincc.edu](mailto:jpcise@austincc.edu) & New York Times , April 9, 2017 by Karoline Kan & Mike Ives. Dedicated to a University of Texas Science Ed. & Geology Professor, Dr. Barafauldi

## Meteorite Finder Fights China's (Mostly Terrestrial) Property Law



**INTRODUCTION:** Objective of this application is to confirm density(gm./cc.) of this meteorite. Meteorites are composed of siderite(iron carbonate) which have a density of about 3.9 gm./cc. according to NASA & Wikipedia.

**QUESTIONS:** (a) Find volume of this meteorite in  $\text{ft}^3$ ? (b) Convert volume in  $\text{ft}^3$  to  $\text{m}^3$ ? , (c) Convert 17.8 tons to pounds?, (d) Convert weight in pounds to kg.?, (e) Find density of siderite meteorite in  $\text{kg}/\text{m}^3$ ? (f) Convert density in  $\text{kg}/\text{m}^3$  to  $\text{gm}/\text{cm}^3$ ?

**HINTS:**  $\text{ft}^3 = 0.0283 \text{ m}^3$  ,  $2000 \text{ lb.} = 1 \text{ ton}$  , density = mass/volume =  $m/V = \rho$  ,  $0.454 \text{ kg./lb.}$  ,  $\text{kg.} = 1000 \text{ gm.}$  ,  $100 \text{ cm.} = 1 \text{ m.}$  ,  $10^6 \text{ cm}^3 = 1 \text{ m}^3$

**ANSWERS:** (a)  $143.8 \text{ ft}^3$  , (b)  $V = \sim 4.07 \text{ m}^3$  ,(c)  $35,600 \text{ lb.}$  (d)  $m = 16,162 \text{ kg.}$  , (e)  $\rho_{\text{SIDERITE}} = 3.97 \times 10^3 \text{ kg./m}^3$  (f)  $\rho = 3.97 \text{ gm./cc}$  (close to know value of siderite)

**COMMENT:** Density of iron is about  $7.9 \text{ gm./cc.}$ . Thus, this meteorite is less dense than iron as we know it.

Kenjiebieke Reamazhaen in 2011 with the meteorite on his family's land in the Xinjiang autonomous region. He is the elder son of Juman Reamazhaen, the herder who found the meteorite.

BEIJING — One summer day, a Kazakh herder in northwest China noticed that a **giant black boulder had appeared overnight in the grasslands where he raises sheep and cattle.** He left it there, and it sat undisturbed for more than two decades. But in 2011, local officials declared the rock a meteorite and hauled it away, arguing that natural resources were state property. So the herder and his sons decided to sue. "The meteorite wasn't made on land, or even on the earth," the family's lawyer, Sun Yi, said in a telephone interview from Shanghai. "It's from outer space, so it should belong to the person who first discovered it The Xinjiang **(((meteorite weighs 17.8 tons and is made of siderite, or iron carbonate,)))** according to a report in the Chinese news media that cited an official research center. A lawyer for the family said that, to his knowledge, the government had not conducted any scientific tests on it. **Mr. Sun said he thought it was worth nearly \$320 million based on his understanding of the commercial meteorite market.** But Tong Xianping, a meteorite collector in Urumqi, the Xinjiang capital, said by telephone that **\$24 million was a more realistic value** based on what he estimated was the rock's per-gram value of about \$1.45.