# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

## NCGS DINNER MEETING

## *"RESULTS FROM THE MARS SCIENCE LABORATORY ROVER CURIOSITY's GEOLOGICAL INVESTIGATIONS OF THE SURFACE OF MARS"*


**Speaker**
**Dr. David F. Blake,** Principal Investigator
Mars Science Laboratory Rover Curiosity
NASA Ames Research Center


**Wednesday May 29, 2013**
6:00 PM at Orinda Masonic Center
(Reservations are required by May 24, 2013, Limit 100 persons)
We are sorry but we will not be able to accommodate "walk-ins"

Stepping out of our normal routine, the **Northern California Geological Society** is pleased to announce this *special dinner and evening* with **Dr. David Blake**. For this unique event, planned for our normal monthly meeting date, but starting one-half hour early, we are planning in typical NCGS style, a **Back Forty Texas BBQ dinner consisting of Pork Ribs and BBQ Chicken, Tossed Green Salad, BBQ Beans, Fresh Corn Cobettes. For vegetarian dinners a deluxe veggie burger will be served in place of BBQ. Desert will include assorted cookies and brownies. We may be again serving wines from California specials (90 pts +).** Please also note that a vegetarian option is available if notified ahead (please see the registration form below).

### *Abstract: Geological Investigations of the surface of the Mars*


One of the principal goals of the Mars Science Laboratory rover Curiosity is to identify and characterize the early habitable environments of Mars, as recorded in the stratified rocks and soil of Gale crater. The suite of instruments aboard Curiosity will make measurements useful for determining the presence and lateral/vertical distribution of hydrated phases, the mineralogy and "preservation potential" of sediments and rocks, and the identity and isotopic composition of volatiles, organics, and other carbon-containing molecules, should they be present.

Curiosity's mast and arm instruments allow it to perform essentially the same functions as a field geologist would on Earth. Once a location is characterized, Curiosity's sample acquisition system can deliver samples of rock or soil to the "laboratory" instruments CheMin and SAM. CheMin, a powder X-ray Diffraction /X-ray Fluorescence (pXRD/XRF) instrument, determines the quantitative mineralogy of scooped soils and powders obtained from drilled rocks. Hydrated minerals can be identified, along with whole-rock mineralogy for characterizing the environment of formation and preservation potential for organic molecules. SAM consists of a gas chromatograph – mass spectrometer (GC-MS), and a tunable laser spectrometer (TLS). SAM will accept the same powdered rock and soil samples as CheMin, and will identify and measure trace organic carbon, as well as the elemental and isotopic composition of volatiles released during heating.

The overall progress of the mission, as well as mineralogical results from an analysis of the soil of an aeolian bedform ("Rocknest soil") and from a drilled bedrock sample ("Yellowknife Bay") will be described.

## *Speaker Biography:*

Dr. David Blake is the Principal Investigator of the CheMin XRD/XRF instrument on the Mars Science Laboratory rover Curiosity, and is a member of the Principal Science Group that directs the activities of Curiosity during its 2-year mission.

He came to Ames Research Center as a NRC postdoctoral fellow, and became a research scientist in the Exobiology Branch at Ames in 1989. He was the Exobiology Branch Chief from 2000-2004. In nearly 25 years of research at Ames, he has studied astrophysical ices, interplanetary dust, Mars meteorites, lunar soils and stratopheric roots. He received a B.S.in Biological Sciences from Stanford University in 1973. After a stint in the US Navy, he attended graduate school at the University of Michigan, where he received a PhD in Geology & Mineralogy in 1983.

********** **Dinner Logistics** **********

**Meeting Details**: Social Hour: 6:00 – 7:00 pm; Dinner: 7:00 – 8:00 pm **Presentation**: 8:00 – open
**Time**: May 29, 2013, 6:00 pm, Orinda Masonic Center 9 Altarinda Road, Orinda, CA. **Cost**: **$25/person**

**********REGISTRATION FORM (Dr. David Blake's Dinner) **********

Name:_____ E-mail:_____

Phone (day):_____ Phone (cell) _____

Dinner: Regular:_____ Vegetarian: _____ (Please check one) Check Amount:

Please mail a check made out to **NCGS** to:

**Tridib Guha**
**5016 Gloucester Lane**
**Martinez, CA 94553**

Questions: e-mail: tridibguha@yahoo.com Phone: (925) 451-1999