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FACULTY newsletter

CPMS Physical and Mathematical Sciences

ABOVE Paul Farnsworth was recognized by the Society for Applied Spectrometry for his many years of service.

Chemistry Professor Honored with Award

The College of Physical and Mathematical Sciences and the Department of Chemistry and Biochemistry are pleased to announce that Dr. Paul Farnsworth has received the Distinguished Service Award from the Society for Applied Spectrometry (SAS).

The award was formally presented at the 2009 Federation of Analytical Chemistry and Spectroscopy Societies meeting in Lousiville, Ky., on October 20th.

Farnsworth received the award primarily in recognition of his twelve years of service as editor of Applied Spectroscopy, a journal published by the SAS. In addition to serving as the journal's editor since 1997, he has also sat on several national committees and chaired the local Intermountain section of the society.

Though he began his research career studying energy transport and excitation mechanisms in inductively coupled plasmas used as emission sources, he has slowly evolved into a mass spectrometrist. However, he still maintains his interest in optical spectroscopy. His work on ion transport in ICP-MS has been recognized twice with the Spectrochmica Acta Atomic Spectroscopy Award, first in 1998 and again in 2006. He also received the Lester W. Strock Award from the SAS and the Utah Award from the American Chemical Society in 2006.

Farnsworth received his Bachelor's degree from BYU in 1977 and his Ph.D. from the University of Wisconsin in 1981, prior to conducting post-doctoral research with Dr. Gary Hieftje at Indiana University. He returned to BYU as an assistant professor in 1983 and is currently chair of the university's Department of Chemistry and Biochemistry.

The Society for Applied Spectroscopy is a nonprofit organization "formed to advance and disseminate knowledge and information concerning the art and science of spectroscopy." Over the course of its 40 years, SAS has remained committed to education and providing quality benefits to their 2,000 members.

by: Steve Pierce

ABOVE Brooks Britt's discovery of a large quarry in central Utah has revealed a literal dinosaur stomping ground.

Professor Discovers Dino Stomping Ground

Imagine the gruesome sound of bones snapping as a thirsty, 30-ton dinosaur tramples a heap of fresh carcasses on his way to a rapidly shrinking lake. That's the scene revealed by a painstaking analysis of thousands of bones unearthed near Moab, Utah by geologists from Brigham Young University.

So far the researchers have identified 67 individual dinosaurs representing 8 species – and they have only scratched the surface of this diverse quarry. Mysteriously, nearly all of the 4,200 bones recovered so far are fractured, as reported in the scientific journal Palaeo.

"Although enough bones were recovered to assemble several complete dinosaurs, the vast majority of bones are broken to bits and pieces, just pulverized," said BYU professor Brooks Britt, lead author on the study.

The researchers reconstructed how the bones got there and why they are in such bad shape.

The quarry, located immediately west of Arches National Park, contains dinosaurs of all sizes and ages, indicating a massive die-off event. The location of this dense cluster of bones – near the shore of an ancient lake bed – suggests a drought was the cause.

Yet the biggest puzzle was the cause of all the fractures. A closer look revealed that most of the breaks were angled "greenstick" fractures that occur in fresh bones.

The bones broke before they became brittle.

"Some of these bones were almost 5 feet long, and they are green, and you really have to work hard to shatter bone that's still green," Britt said. "That means the big boys were stepping on those things. Those would have been audible, big snaps."

story continues on next page

IMPORTANT DATES TO REMEMBER

- *Thanksgiving Break (No Class)*
  November 25-27

- *Exam Preparation Days (No Class)*
  December 11-12

- *College Christmas Luncheon*
  December 11, 11:30am-1pm
  ESC Pendulum Court

- *Final Exams*
  December 14-18

- *Winter Break (No Class)*
  December 19-January 4

- *Fall Semester Grades Due*
  December 30

- *Spring Research Conference Web Site Open for Abstract Submission*
  January 15

- *Martin Luther King, Jr. Day (No Class)*
  January 18

- Annual Awards Banquet
  January 28, 6pm
  WSC Ballroom

College NEWS

Victor Migenes, professor of physics and astronomy, presented the seventh annual Summerhays Lecture on October 9th. Following the lecture series' intended focus, Migenes discussed the cohesive and constructive nature of the relationship between science and religion, particularly in an astronomical sense. To view video of his entire presentation, click here.

George M. Whitesides, a professor at Harvard University and the world's most cited living chemist, presented the third annual Izatt-Christensen Lecture, jointly sponsored by the Department of Chemistry and Biochemistry and the Department of Chemical Engineering, on November 3rd. In the lecture, Whitesides addressed the ways in which science and technology from developed countries could be applied and achieve desirable results in Third World scenarios. To view video of his entire general session presentation, click here.

Britt *continued*

The heavy-footed culprits? Huge, plant-eating sauropods and iguanodontids that stomped more than 100 million years ago during the Early Cretaceous Period. Some of the sauropods from this quarry are cousins to the brachiosaurus.

The bones are now housed in BYU's Earth Science Museum, which re-emerged as the Museum of Paleontology during Homecoming weekend.

Museum curator Rod Scheetz, a co-author on the study, says the grand re-opening will include the debut of a 9-foot-long triceratops skull from Montana.

Regular exhibits at the museum have featured dinosaur skeletons of a camptosaurus and an allosaurus, a mural of the Utah-Colorado region in the Jurassic Period and a preparation lab window showing museum personnel preparing fossils.

The museum – which is popular with families and school groups – is located at 1683 N. Canyon Road in Provo. The museum is open Monday through Friday from 9 a.m. to 5 p.m., and Monday evenings from 6 p.m. to 9 p.m. Admission is free.

by: BYU News

COLLEGE PUBLICATIONS

Geological Sciences

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O´Leary, M.S., Lira, R., Dorais, M.J., and Tassinari, C.C.G., (2009) A post-collisional lamprophyric event in Sierra Norte, Córdoba, Argentina: mineralogical, geochemical and isotopical characteristics. Journal of South American Earth Sciences, 28, 277-287.

Lira, R., Poklepovic, M.F., Dorais, M.J., Millone, H.A., and Gomez, G.M., (2009) Fluid-rock interaction at the roots of an Eopaleozoic epithermal systems, Sierra Norte de Cordoba, Argentina: paragenesis, thermometry and fluid sources. Journal of South American Earth Sciences, 28, 263-276.

Dorais, M.J., Wintsch, R.P., Nelson, W.R., and Tubrett, M.. (2009) Insights into the Acadian orogeny, New England Appalachians: a provenance study of the Carrabassett and Kittery formations Maine. Atlantic Geology 45, 50-71.

Mathematics

Acosta, S., Villamizar, V. (2009). "Finite difference on grids with nearly uniform cell area and line spacing for the wave equation on complex domains", Journal of Computational and Applied Mathematics, doi:10.1016/j.cam.2009.08.048.

Statistics

Colyar, J. M., Eggett, D. L., Steele, F. M., Dunn, M. L., Ogden, L. V. (2009). "Sensitivity Comparison of Sequential Monadic and Side-by-Side Presentation Protocols in Affective Consumer Testing", Journal of Food Science, 74(7), 322-327.

Brown, N. A, Bown, J, Eggett, D. L. (2009). "Making Rapid Gains in Second Language Writing: A Case Study of a Third-Year Russian Language Course", Foreign Language Annals, 42(3), 424-452.

Sun, XF., Li, D., Woolley, A.T., Farnsworth, P.B., Tolley H. D., Warnick, K.F., Lee, M.L. (2009). "Bilinear electric field gradient focusing", Journal of Chromatography A, 1216 (37): 6532-6538.

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Manton, K.G., Gu, X-L., Lowrimore, G., Ullian, A., Tolley, H.D. (2009) "NIH funding trajectories and their correlations with US health dynamics from 1950 to 2004", Proceedings of the National Academy of Sciences of the United States of America, 106 (27): 10981-10986.

Li, Y., Gu, B.H., Tolley, H.D., Lee, M.L. (2009). "Preparation of polymeric monoliths by copolymerization of acrylate monomers with amine functionalities for anion-exchange capillary liquid chromatography of proteins", Journal of Chromatography A, 1216 (29): 5525-5532.

Li, Y., Tolley, H.D., Lee, M.L. (2009). "Preparation of polymer monoliths that exhibit size exclusion properties for proteins and peptides", Analytical Chemistry, 81 (11): 4406-4413.

Sun, XF., Farnsworth, P.B., Tolley, H.D., Warnick, K.F., Woolley, A.T., Lee, M.L. (2009). "Performance optimization in electric field gradient focusing", Journal of Chromatography A, 1216 (1): 159-164.

Schlegel, M. E., Mayo, A. L., Nelson, S., Tingey, D., Henderson, R., and Eggett, D. (2009)Paleoclimate of the Boise Area, "Idaho from the Last Glacial Maximum to the Present Based on Groundwater H and O Compositions," Quaternary Research, 71(2), 172-180.

Physics and Astronomy

Analytic propagators for spin–orbit interactions. Bailey C Hsu and Jean-François S Van Huele. J. Phys. A: Math. Theor. 42, 475304, 1-17 (2009).