



# Association of Applied Geochemists

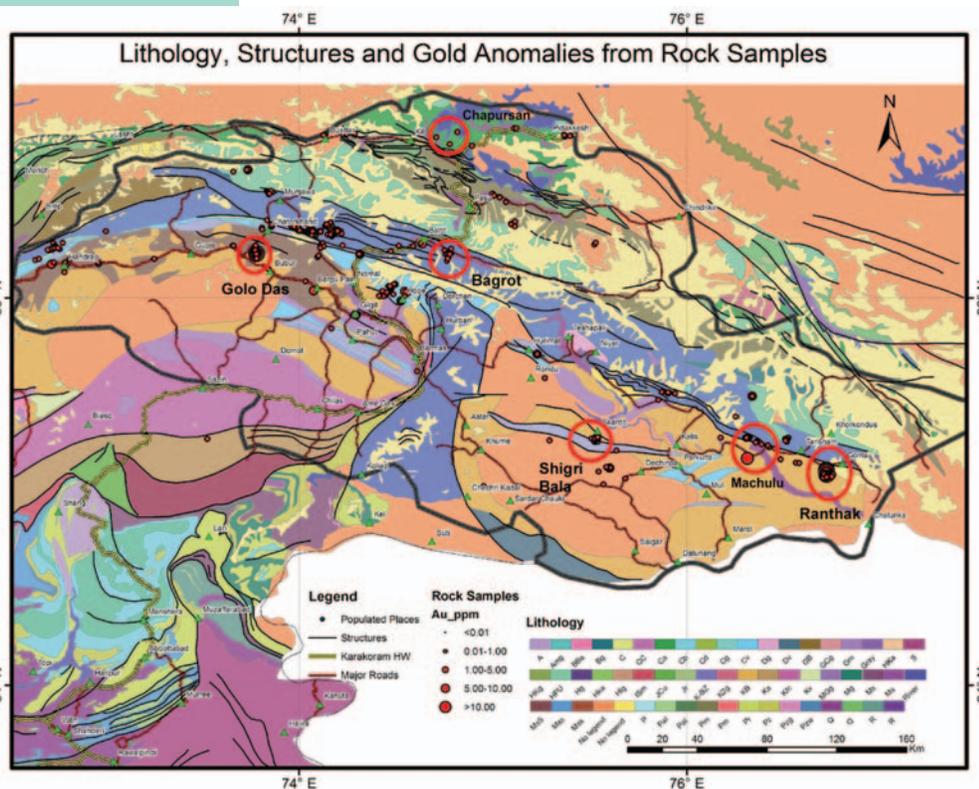
[www.appliedgeochemists.org](http://www.appliedgeochemists.org)

## NEWS FROM AAG REGIONAL COUNCILLORS

### Pakistan

The University of Peshawar's National Centre of Excellence in Geology (NCEG; see [www.upesh.edu.pk/academics/researchcenter/nceg/nceg.html](http://www.upesh.edu.pk/academics/researchcenter/nceg/nceg.html)) has recently completed a synthesis of the entire available geochemical data set for gold and base metals in northern Pakistan covering a period of two decades (1992–2012). During this period, more than 5000 samples were analyzed by various agencies, such as the Pakistan Mineral Development Corporation, the Sarhad Development Authority, and international bodies like MINORCO. The entire data set was scanned, digitized, and stored in a GIS database. The database also includes satellite imagery, digital elevation model data, and other related information. From this, the NCEG has identified six target areas for further gold and base metal studies: (1) Bagrot Valley, (2) Golo Das, (3) Machulu Valley, (4) Shigri Bala, (5) Ranthak, and (6) Chapursan Valley (see map). According to the NCEG, these areas may hold potential for gold mineralization.

On the basis of the above studies, a joint program funded by the National Academies of Science has been started with Houston University (see [www.geosc.uh.edu/features/geos-nsm/gold-prospecting.php](http://www.geosc.uh.edu/features/geos-nsm/gold-prospecting.php)). Three field trips were conducted in the northern areas of Pakistan in 2011 (see photo). The first field trip was conducted by the University of Peshawar group in April. During this trip, 30 water and 30 sediment samples were collected along the Gilgit River; in addition, 25 blood, 25 urine, and 25 nail samples were provided by the gold panners and their family members. During the second field campaign in June, the University of Houston group collected 40 water and 37 sediment samples along the Indus, Gilgit, and Hunza rivers. The third field campaign was conducted in July by the University of Peshawar group, which collected more than 120 rock samples in four of the six identified target areas: Bagrot Valley, Golo Das, Machulu Valley, and Shigri Bala. Currently, water and sediment samples are being analyzed at the University of Houston, while rock samples are being cut and pulverized at the University of Peshawar. About 90 thin sections were prepared for petrographic study. Representative samples were selected for geochemical work after splitting the pulverized samples. The University of Peshawar group has started laboratory work on these representative samples. About 90 rock chips have been shipped to the University of Houston for geochemical and spectral analyses. In parallel to this, remote



Geological map of northern Pakistan (after Searle and Khan, 1996, Oxford University), showing the concentration of gold in rock samples and the locations of identified target areas



Prof. Dr. Tahir Shah flanked by graduate students Laeq Ahmad and Sadaf Miandad of the NCEG, University of Peshawar, during field work in the Bargot Valley

sensing analysis is helping identify alteration zones that could contain gold. The project includes training Pakistani scientists in the processing of remotely sensed images and in trace element geochemistry. The area's gold panners will also be trained in safer, more efficient methods of panning, which will reduce mercury pollution of river water

and groundwater. Prof. Dr. Tahir Shah of the NCEG, University of Peshawar, is acknowledged for providing the above information.

**Iftikhar A. Malik**  
(malik.iftikhar@gmail.com)  
AAB (pvt) Ltd Islamabad,  
AAG Regional Councillor

## STUDENT-INDUSTRY WORKSHOP AND FIELD TRIP

In an effort to attract more students into the mineral exploration industry, the Prospectors and Developers Association of Canada (PDAC) ran its sixth annual Student-Industry Mineral Exploration Workshop (S-IMEW) on May 5-18, 2012, in Sudbury, Ontario. The top 26 Canadian postsecondary geoscience students were selected from across the country to attend the workshop. Students participated in lectures, presentations, and hands-on courses covering exploration techniques, mineral deposits, geophysics, and geochemistry, as well as environmental, health and safety, and corporate social responsibility issues. Field trips to Timmins and Rouyn-Noranda were included in the workshop, allowing students to see what these world-class mining regions have to offer.

Among the highlights of this program is "Geochemistry Day," organized and taught by Stew Hamilton and Richard Dyer from the Ontario Geological Survey, Beth McClenaghan from the Geological Survey of Canada, and Noelle Shriver from Vale, all of whom are members or fellows of the AAG. They introduced students to exploration geochemical techniques, but the main focus of the day was to provide the students with practical experience that they are unlikely to receive in the university setting. To that end, students carried out lake sediment sampling firsthand in boats on Ramsey Lake in Sudbury. Beth then introduced the students to the microscopic world of indicator minerals and to hands-on mineral picking using microscopes. Noelle took the students on a short field traverse to explore and review soil profiles and carry out soil sampling in typical glaciated terrain.

The field trip was a great opportunity for students to see new parts of Canada, learn about the wide variety of career opportunities in mineral exploration, gain experience with exploration techniques not typically taught to undergraduate students, and experience some of the adventures of being a geoscientist.

**Beth McClenaghan** (Beth.McClenaghan@NRCan-RNCan.gc.ca)  
Geological Survey of Canada

White Island, New Zealand

**26th International Applied Geochemistry Symposium,**  
incorporating the  
**New Zealand Geothermal Workshop**

18-21 November, 2013  
Rotorua, New Zealand  
[www.gns.cri.nz/iags](http://www.gns.cri.nz/iags) for  
First Circular & information on

- Technical programme
- Short courses
- Field trips
- Partner activities

ASSOCIATION OF APPLIED GEOCHEMISTS  
GNS SCIENCE

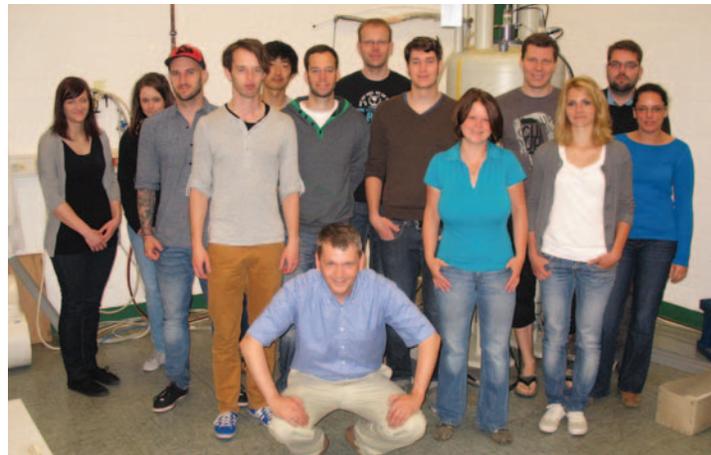


German Mineralogical Society

[www.dmg-home.de](http://www.dmg-home.de)

## REPORT ON THE DMG SHORT COURSE "APPLICATIONS OF SOLID STATE NMR SPECTROSCOPY IN MINERALOGICAL AND GEOSCIENTIFIC RESEARCH"

May 29-June 1, 2012, Bochum



Participants in the NMR short course at the University of Bochum, Germany

Now almost a tradition, the DMG/DGK short course on NMR spectroscopy took place at the University of Bochum from May 29 to June 1. Under the supervision of Dr. Michael Fechtelkord, 14 participants from universities in Germany, Austria, and Switzerland dedicated four days to exploring the possibilities of NMR spectroscopy.

After a theoretical introduction in the morning, the newly learned knowledge was carried into the lab to test it in the real world. Thus Tuesday afternoon was devoted to measuring the spin-relaxation of  $^1\text{H}$  and the dynamics of tetramethylammonium iodide. In doing so, the participants learned how to handle a spectrometer and to prepare samples for measurement. But no analytical procedure is complete without the actual evaluation of the measured data.

Thus after getting to know the huge magnet better (see photo), the second day started with the theory of dipole and chemical interactions in solids. The aim was to find a solution to the problem of how to measure a good spectrum despite the presence of anisotropy effects. The answer is simple and fascinating at the same time: by using the magic angle. After solving these problems, the evaluation of spectra still needs a lot of experience and patience.

On Thursday, the participants took a peek into the rabbit hole. NMR spectroscopy not only can show the local distortions in the crystal lattice induced by doping, it can also distinguish between different atomic neighbors.

It is fascinating to see the possibilities provided by NMR spectroscopy for finding answers to many scientific problems. Also it is amazing to see how scientists come up with new solutions to experimental problems and measure what could not be measured before.

Last, but not least, this short course gave young scientists the opportunity to exchange experiences in a relaxed atmosphere. The two social events were well organized and great successes.

**Naemi Waeselmann**  
University of Hamburg