

Field Trip to Natural Zeolite Deposits of Central Italy

Jens Weitkamp*

It is a well established and good tradition to combine the large International Zeolite Conferences with several satellite events, and the most charming and exciting of these events grouped around the 10th International Zeolite Conference (Garmisch-Partenkirchen, Germany, July 17 to 22, 1994) was the Field Trip to natural zeolite deposits in Etruria and Tuscia, in Central Italy.

The 1994 Field Trip was organized by a committee headed by Professor Carmine Colella, Dipartimento di Ingegneria dei Materiali e della Produzione, Università degli Studi di Napoli "Federico II". He was assisted by a team of outstanding Neapolitan scientists, and particular mention deserve Professor M. de' Gennaro who coordinated the technical program, and Dr. Maria Rosaria Adabbo and Dr. Alessio Langella who both prepared the daily tours and visits to the zeolite deposits and quarries. They furthermore authored the very valuable Field Trip Guide handed out to the participants and assisted the participants in every manner during the tours.

* See a brief CV at the end of the article.



Carmine Colella and Jens Weitkamp at the Palombara quarry
(Orvieto-Bagnoregio formation)

About 25 participants of the 10th International Zeolite Conference had booked the Field Trip. They started from Garmisch-Partenkirchen on Saturday morning, July 23, 1994, by coach. An Italian style lunch was organized in the Osteria dei Poeti in the city of Carpi (Modena) and gave the participants a taste of the excellent cuisine waiting for them during the entire Field Trip. On the same day, around midnight, the headquarters for the tours were reached, viz. the lovely Hotel Lorianca sul Lago, located in the city of Bolsena, on the shore of the volcanic lake Lago di Bolsena.

The first tour started on Sunday morning, July 24, 1994. It went westwards along the Northern rim of Lago di Bolsena and touched such picturesque places like Sorano, Sovana with its

impressive cathedral and Etruscan tombs and the city of Pitigliano. Major stops were arranged at the Latera Caldera and the Piandirena quarry, excavated in the yellow tuff on the Sorano formation with a daily production of ca. 12,000 blocks for the construction industry. The tuff occurring here is deeply zeolitized with a content of 67 % chabazite and 3 % phillipsite.

Starting from Bolsena again, the second tour on Monday, July 25, 1994 first went to a pozzolana quarry. Pozzolana denotes a chaotic volcanoclastic material mainly composed of glass fragments, lithic clasts and pumice, and some potassium feldspars. Pozzolana is often considered the volcanic rock which, following post-depositional minerogenetic processes, was transformed into zeolitized facies and almost always lithified. The materials excavated from this quarry are used as additives in blended cements.



Participants on the bridge to Civita di Bagnoregio

The next stop during this tour was in the beautiful city of Orvieto, built on the huge volcanic complex called Orvieto-Bagnoregio. After a visit to the Orvieto underground, the tour went on to the Palombara tuff quarry where tuff blocks for the construction industry are produced. The chabazite and phillipsite contents of this tuff amount to, respectively, 50 % and 14 %. A true highlight of this tour was the final stop at Civita di Bagnoregio, often called the dying city: erosion of the sedimentary rocks brought about a series of landslides at the foot of the cliff which, in turn, caused progressive retreat of the walls.

Two more quarries were visited during the third tour on Tuesday morning, July 26, 1994, viz. the Edilcava Falisca and Romana Tuff quarries. The tuff materials in both quarries is again deeply zeolitized with more than 50 % chabazite and some 5 to 7 % phillipsite. The Field Trip ended in Rome with a superb lunch in a restaurant near Termini Railway Station.

Cordial thanks go to Carmine Colella and his team for having organized this very instructive and exciting Field Trip in one of the most beautiful areas of the world. All participants agreed upon having not only acquired valuable knowledge on naturally occurring zeolites, but they also felt that they had spent three and a half days among good friends and most hospitable colleagues.

May 2015

Professor Jens Weitkamp

Jens Weitkamp studied chemistry at the University of Karlsruhe and Free University of Berlin. He received his Ph.D. and his habilitation in chemical engineering from the University of Karlsruhe. From 1986 to 1988 he was a professor of chemical technology at the University of Oldenburg, and in 1988 he was appointed Director of the Institute of Chemical Technology at the University of Stuttgart where he has been active ever since and retired in 2008. His research focused on heterogeneous catalysis on zeolites, especially in the fields of petroleum refining and petrochemical reactions, and the synthesis and characterization of zeolitic and similar nanoporous materials.

He served the International Zeolite Association (IZA) in various functions. For example, he was a member of the IZA Council from 1986 to 1992 and 1994 to 2001 and a Co-Chairman of the IZA Catalysis Commission from 1986 to 1998. He moreover served as the IZA Vice-President from 1994 to 1997 and as the President of the IZA from 1997 to 2001. In addition, Jens Weitkamp was the Chairman of the Organizing Committee of the 10th International Zeolite Conference held in Garmisch-Partenkirchen in 1994. Finally, he was the founder of the scientific journal *Microporous and Mesoporous Materials* and its Editor-in-Chief from 1993 to 2002. Jens Weitkamp is an author of more than 350 scientific papers on numerous aspects of zeolite science and technology, and an editor of more than 20 books. His research was honored by a number of scientific awards, e.g., the Alwin Mittasch Award 2009 for his fundamental research on the mechanisms of hydrocracking, isomerization and hydrogenation of aromatics on zeolite catalysts.