TOURMALINE 2017

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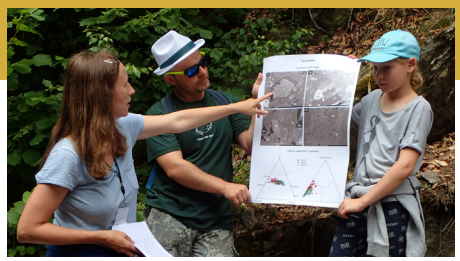
Twenty years ago, most people relegated tourmaline to the "accessories" category and ignored it in petrological analyses. This view has since changed dramatically, and tourmaline is now widely used as an extraordinary archive of petrologic processes and host-rock formation conditions, allowing for element sources, temperature, pressure, fluid composition, pH, and provenance to be constrained. Although this transformation was already underway in 1997, the first Tourmaline Conference (June 1997)—organized by Milan Novák (Moravian Museum; Masaryk University, Czech Republic) and Frank Hawthorne (University of Manitoba, Canada)—acted as a catalyst. This meeting brought together an international group of scientists to discuss tourmaline research and to advance tourmaline science, and this led to a host of fruitful collaborations. Over the years, this meeting attained mythical status among tourmaline researchers, and a second edition was long overdue.

Tourmaline 2017 participants from Europe, Asia, Africa, and North and South America, with conveners Jan Cempírek (front LEFT), Milan Novák (CENTER WITH SIGN). PHOTO: RADEK ŠKODA.

In June 2017, at the 20th anniversary of the first conference, Jan Cempírek (Masaryk University) and Milan Novák reconvened 61 scientists from 17 countries at the same location near Nové Město (Czech Republic) to assess progress in tourmaline research, to discuss new challenges, and to catalyze community efforts for advancing tourmaline science. The meeting was a huge success, not least because the format allowed for abundant discussion—helped by world-renowned Czech beer—thereby promoting cross-fertilization among crystallographers, petrologists, mineralogists, and isotope geochemists. The relaxed atmosphere also encouraged students to fully participate in these discussions. With students and early career scientists making up nearly half of the attendees, the appeal of tourmaline research to the next generation is clear.

A series of eight keynote addresses over the three-day conference highlighted the state-of-affairs, challenges, and future directions for tourmaline research in mineralogy, petrology, and geochemistry. These were interspersed with numerous contributed presentations and posters. With the experience of having attended both meetings, Darrell Henry (Louisiana State University, USA) began with a historical perspective on the issues leading to the 1997 conference and a broad overview of progress since that time. The large increase in publications and the utility of tourmaline in many disciplines were striking. Ferdinando Bosi (Sapienza University of Rome, Italy) reviewed the complexities of the tourmaline structure and chemistry, as well as the advances

Tourmaline 2017 field trip participants at Přibyslavice. PHOTO: RADEK ŠKODA.



Tourmaline inspires all generations: (LEFT) Renata Čopjaková, (CENTER) Petr Gadas, and (RIGHT) Toniška Škodová. PHOTO: BARB DUTROW.

in structure determination that have highlighted the importance of short-range order. Andreas Ertl (University of Vienna, Austria) focused on tourmalines with tetrahedral boron, a finding first reported at the 1997 meeting. Federico Pezzotta (Natural History Museum of Milan, Italy) presented tourmaline in gem pegmatites, noting the tendency of each pegmatite province to have tourmaline growth in only one crystal orientation. Eleanor Berryman (GFZ Potsdam, Germany) discussed experimental work on tourmaline that has allowed quantitative correlations to be made between select major elements in tourmaline and fluid chemistry. Barb Dutrow (Louisiana State University, USA) highlighted the utility of tourmaline as an indicator of the fluid phase, relating, for example, some tourmaline species (e.g. oxy-dravite/povondraite) to salinity trends. Horst Marschall (Goethe University, Germany) provided an overview of tourmaline isotopic systematics where "no element is left behind" and discussed the need for more studies on isotopic systems. Vincent van Hinsberg (McGill University, Canada) presented new work on trace elements in tourmaline, demonstrated the challenges in obtaining and interpreting such data, and showed the potential for carefully collected data. Robert Trumbull (GFZ German Research Centre for Geosciences, Germany) showed that tourmaline has many applications when it comes to interpreting the genesis of ore systems, and he focused on B isotopic studies. Milan Novák (Czech Republic) bookended the conference with a warm welcome and an elegant summary.

One of the key outcomes of the meeting was the recognition that tourmaline's unique structure has a complex control on its composition: both short- and long-range element order determine what major and trace elements can be accommodated. Understanding and quantifying this control holds great promise to expand tourmaline's use as an indicator mineral. The meeting also provided a forum for the International Mineralogical Association (IMA) Subcommission on Tourmaline Nomenclature to discuss new ideas and modifications. The complete program can be found at www.tourmaline2017.cz. A special issue of the *Journal of Geosciences* will be dedicated to tourmaline, and we invite contributions from the wider tourmaline research community to this issue. The deadline for submissions is 30 September 2017. Please contact Jan Cempírek (info@tourmaline2017.cz) for more information.

Social events allowed ample time for interactions among colleagues, spawning new collaborations and debating every aspect of tourmaline science. The highlights were the pig roast, a trip to the Zelená Hora UNESCO heritage site, and the baroque castle Žďár nad Sázavou.

A fabulous field trip to eight classic tourmaline localities in the eastern part of the Bohemian Massif followed, led by Milan Novák and Jan Cempírek with Petr Gadas, Radek Škoda, and Renata Čopjaková. Outcrops permitted all of the attendees to collect tourmalines to their heart's delight: from abyssal pegmatites to orthogneisses to metacarbonates to NYF (i.e. rich in elements Nb, Y, and F) pegmatites to nodular granites. The comprehensive accompanying field guide supplemented overviews given by tourmaline workers at each locality. Cultural highlights of the trip included a visit to the St. Barbara church in Kutná Hora—one of the few churches in the world with murals of miners and a statue of a miner inside the church—and the Church of Bones in Kutná Hora.

With the success of the conference, another Tourmaline Conference is in the works. Hopefully, in less than 20 years.

Barb Dutrow, Louisiana State University, USA
Vincent van Hinsberg, McGill University, Canada
Jan Cempírek, Masaryk University, Czech Republic
Klaus-Dieter Grevel, Jena University, Germany