

Giovanni B. Piccardo obtained the Degree in Geological Sciences in 1967 at the University of Genova. He became Assistant Professor of Petrography in 1969 and Encharged Professor in 1971 at the University of Genova.

Giovanni B. Piccardo became Full Professor of Petrology in 1980, at the University of Florence in the period 1981-1983, and at the University of Genova from 1983 to October 30, 2012.

He is presently retired from the University.

Teaching

Giovanni B. Piccardo, starting from 1971, has given courses, as Encharged and Full Professor, of Crystallography, Geochemistry, Petrography, Igneous Petrology, Mantle Petrology and the origin of basaltic magmas, Petrogenetic Processes and Geodynamic Settings.

Organization

In the second half of the eighties, he has been a component of the "Italian National Committee for the International Lithosphere Program"- CNR (Italian National Research Council). He co-organized the Meeting: The Lithosphere in Italy: Advances in Earth Science Research : a Mid-term Conference Convened by the Italian National Committee for the International Lithosphere Program and Sponsored by the Itsalian Accademia Nazionale Dei Lincei and the Consiglio Nazionale Delle Ricerche (CNR) (Roma, 5-6, Maggio 1987). He has been co-editor of the Volume The Lithosphere in Italy: Advances in Earth Science Research (A. Boriani, M. Bonafede, G.B. Piccardo, G.B. Vai Eds.), Accademia Nazionale dei Lincei. (1987).

In the period 1983-1986 he has been the Dean of the Institute of Petrography of the University of Genova.

In the period 1995-2000 he has been the Scientific Coordinator of the Scientific-Disciplinary Area of Earth Sciences of the University of Genova.

Giovanni B. Piccardo organized the “Seminari di Scienze della Terra (Earth Science Seminars)”, for undergraduate and PhD students, at the University of Genova, with the participation of italian and foreign speakers, in 2006, 2007, 2008, 2011.

Giovanni B. Piccardo organized:

- the International “Peridotite Workshop”, with field excursions, Lanzo, 27-30 September, 2005;
- The International Meeting “HT shear zones”, with field excursions, Chiavari, 2007;
- the International Meeting “Alpine Ophiolites and Modern Analogues”, with field excursions, Lanzo, 2009.

He participated in the organization of the field excursions of the International Meeting “Polar Ridges Meeting”, Sestri Levante, 2006.

Formation

During his academic career, various of his students and collaborators undertaken the academic carrier. Besides various Associated Professors, 5 became Full Professors: Prof. B. Messiga – Univ. Pavia (Petrology); Prof. R. Vannucci – Univ. Pavia (Geochemistry); Prof. G. Ottonello – Univ. Genova (Geochemistry); Prof. R. Tribuzio – Univ. Pavia (Petrology); Prof. E. Rampone – Univ. Genova (Petrology).

Research

Giovanni B. Piccardo, starting from 1968, developed a continuous research activity in the fields of Petrology and Geochemistry on the following topics:

- 1) ophiolites (basalts, gabbros and mantle peridotites) from the Northern Apennine and the Voltri Massif (Ligurian Alps), to recognize the primary compositional characteristics, the genetic processes and the geodynamic setting of formation;
- 2) metamorphic ophiolites, recrystallized at high-pressure conditions (eclogitic meta-gabbros, antigoritic serpentinites and garnet meta-peridotites), from the Voltri Massif and the Western Alps, to investigate the mineral reactions and the chemical exchanges which characterize the thermo-baric conditions of the peculiar subduction environment of their evolution;
- 3) mantle peridotites from oceanic and extensional settings, both present (peridotites from the Zabargad Island - Red Sea) and fossil (ophiolitic peridotites of the Alpine-Apennine system: Lanzo Massif - Western Alps; Voltri Massif - Ligurian Alps; Liguride Units - Northern Apennine; Monte Maggiore - Corsica) and mantle xenoliths in alkaline lavas (Assab - Eritrea).

From the early seventies, he organized and participated in numerous campaigns to studying and sampling ophiolitic and peridotitic rocks, mantle xenoliths in alkaline lavas, eclogitic rocks and mafic-ultramafic intrusive rocks in: Western Alps, Northern Apennine, Newfoundland Island (Canada), Cyprus Island, USSR, Ucraina, Finland, Greenland, Egypt, Red Sea, Ethiopia, Eritrea, Saudi Arabia, Yemen, Somaliland, Oman, Japan.

In the period July-December 1972 he spent a NATO Science Fellowship at the Department of Geology, the University of Western Ontario, London (Canada).

In the period 15-24 September 1972, he participated, as an invited expert, to the "GSA - Penrose Conference on Ophiolites, Oregon-California", where the modern interpretation of the ophiolite associations as fragments of fossil oceanic lithosphere as been established.

In the years 1974-1976 he participated in the: "Italy-USA Cooperative Project on HP-LT metamorphism in the Western Alps (Coordinators: R.G. Coleman, US Geological Survey; G.W. Ernst, UCLA G.V. Dal Piaz, Univ. Torino), for the study of the eclogitic rocks of the Voltri Massif (Ligurian Alps).

Past researches were developed by cooperation with Italian (among others: L. Beccaluva, Univ. Ferrara; G. Serri, Univ. Parma; G. Pasquare', Univ. Milano; G. Rivalenti, Univ. Modena; B. Messiga, Univ. Pavia; R. Vannucci, Univ. Pavia; A. Zanetti, CNR Pavia) and foreign [among others: V. Tromsdorff, ETH Zurich; Gary W. Ernst, UCLA and Stanford (USA); R.L.M. Vissers, Univ. Utrecht (Netherlands); A. Hofmann, Univ. Mainz (Germany); N. Shimizu, WHOI, Woods Hole (USA); E. Nakamura, ISEI, Misasa (Japan); G. Ranalli, Univ. Carleton (Canada)] scientists. Frequent relationships, by means of stages and meetings with excursions, were established with Russian academics: among others: A. Peive, URSS Academy of Science, Moscow; L.L. Perchuk, URSS Academy of Science, Chernogolovka, Moscow; G.N. Savelieva, URSS Academy of Science, Moscow; N.L. Dobretsov, Siberian Branch of the URSS Academy of Science, Novosibirsk.

The studies on lithospheric peridotites represent a major part of the scientific production and the predominant part of the more recent studies. Field, structural and petrologic-geochemical and isotope studies were mostly developed on the ophiolitic peridotites of the Alpine-Apennine system (representing fragments of the lithospheric mantle of the oceanic basin of the Jurassic Ligurian Tethys) to reconstruct the tectonic-metamorphic and magmatic evolution of the mantle lithosphere during continental extension and passive rifting, leading to formation of the Jurassic Ligurian-Piedmontese (i.e., Ligurian Tethys) oceanic basin and the related tectonic and magmatic processes. The studies of Giovanni B. Piccardo led to recognize that the Ligurian Tethys was a fossil analogue of modern slow-ultraslow spreading oceanic basins (Atlantic Ocean, Polar Ocean, Red Sea).

Structural and petrologic researches are focused on the processes of diffuse and focused porous flow of asthenosphere-derived melts within the lithospheric mantle, the processes of interaction between rising asthenospheric melts and the lithospheric mantle column (i.e. the processes of lithosphere-asthenosphere interaction), the depletion, refertilization and impregnation processes produced by the reactive percolation and by the interstitial crystallization of the asthenospheric melts. The processes of thermo-chemical and thermo-mechanical erosion of the mantle lithosphere, as a consequence of melt thermal advection from the asthenosphere, are investigated to constrain the rheological modifications induced in the mantle lithosphere and their geodynamic relevance for the lithosphere evolution during continental extension and passive rifting.

These researches, also with the support of numerical and analogical modelings, have evidenced the relevance of porous flow percolation of melts for the formation of an axial zone in the extending system which is characterized by strongly weakened and softened rheological characteristics (the softened and weakened axial zone). In this zone, the extensional forces are concentrated and the future passive margins of the new lithospheric plates will be separated. The deeper asthenospheric mantle finds the way to upwelling through the lithosphere within this axial zone, undergo partial melting with formation of the MORB melts which intrude (gabbroic bodies) and extrude (lava flows) after the breakdown of the continental crust.

Ongoing researches aim to understanding the geodynamic role of the tectonic/magmatic processes in the transition of the extensional system from lithosphere passive extension and rifting to oceanic spreading in slow-ultraslow spreading oceans. Recently, a geodynamic model of passive rifting in the Ligurian Tethys domain of the Europe-Adria system, has been presented, which evidence the significant coupling and interaction between deformation and melt infiltration in the extending mantle lithosphere. The geodynamic model is based on: 1) Present field, structural and petrologic knowledge on tectonic/magmatic processes recorded in Alpine-Apennine ophiolitic peridotites; 2) Experimental results of numerical and analogue modelling of lithosphere extension and passive rifting; 3) The relevant positive feed-backs between our data from the natural laboratory and results from available experimental works.

Giovanni B. Piccardo is author and co-author of more than 300 peer-reviewed scientific publications, most of them in high I.F. International Journals on Earth Sciences.

He is: - Convener of National and International Congresses; - Editor of Special Issues of National and International Journals; - Referee of National and International Journals - Reviewer of NSF projects.

Giovanni B. Piccardo has: h-index = 37, Citations = 3764, Analysed papers = 241, Considered years = 45 (according to Publish or Perish, data source: Google Scholar), updated August 2014. ResearchGate RG Score = 36.22