

Elena Belluso was born in Moncalieri (TO) the 21th July 1960 and she's resident in Turin.

Degree in Geological Sciences obtained the 21th March 1985 at the Study's University of Torino.
PhD in Mineralogy and Crystallography (cooperative seats: Modena, Pavia, Torino. Series 1986-1989) obtained the 11th September 1989 by the thesis with the title of: "Fibrous Minerals of Piedmont serpentinites".

University researcher in scientific-disciplinary sector (ssd) D03 – Mineralogy and Petrography at the M.F.N. Science Faculty of Torino University since October 1992; rearrangement in ssd GEO/06 Mineralogy and confirmation of the role in October 1995 with choice of full time system.
Associated Professor c in ssd GEO/06 – Mineralogy since November 2002, confirmation to the role in March 2006; rearrangement in ssd GEO/09 – Mining Geo-resources and Mineralogical – Petrographic Applications for the Environment and the Cultural Heritage in October 2007, with choice of full time system.

Actually

- Afferent at Mineralogical and Petrologic Science Department (DSMP) at Study's University of Torino
- Member of Laboratories Committee for the Orientation and the Connection with the Schools of M.F.N. Science Faculty
- Member of Didactic Committee of the first and second level of Degree Course in Natural Sciences
- Individual tutor of students enrolled at the first year of Degree Course in Natural Sciences
- Regular teacher of following courses for the first and the second level and PhD (third level):
"Mineralogy applied at the Cultural Heritage" for the Three-year Degree Course (LT) of Conservation and Restoration of Cultural Heritage – Interfaculty Degree Course; "Mineralogy Applied at Environmental Protection" for the LT Course of Prevention Techniques in Environment and Work Places – Interfaculty Degree Course; "Applied Mineralogy" for the LM Course in Geology Applied at Engineering and Environment; "Learning at TEM with EDS use" for the PhD courses.

Supervisor and co-supervisor of more than 30 of first and second level degree theses; PhD thesis tutor.

Member of exams of first and second level Degree.

Member of an exams of PhD at Study's University of Torino and at Blaise Pascal University in Clermont-Ferrand.

Member of competitions for scholarships and search, for high professionalism technician, for research contracts and grants.

Affiliation to societies

- Mineralogy and Petrologic Italian Society (SIMP)
- Geo-resources, Environment and Cultural Heritage National Group (GABeC)
- Crystallography Italian Association (AIC)
- Interdepartmental Centre for Diffractometer Crystallography ReSearch (CRISDI) of Torino Study's University
- Interdepartmental Centre "G. Scansetti" for Studies on Asbestos and Other Toxic Particulates of Torino Study's University

Professional Activities

- 2005-2008, member of the Regional Committee of Piemonte Region (I) for Cultural Heritage and Environmental Protection and Valorization
- 2005, scientific products evaluation for the Italian research evaluation (CIVR)
- 2008, research project evaluation for the Galileo notification of Italian-French University

- 2010, evaluation of industrial search projects for the intervention “Support at the technological transfer through new knowledge and competences – APQ search and innovation – third integrative act – CIPE funds”, Marche Region (I).

Professional assignments

- 1999 to now, research responsible of the Transmission Electron Microscope Laboratory at the DSMP of Torino Study's University
- 2000-2002 member of the PhD teacher body in Earth Sciences of the Torino Study's University
- 2002-2005 research outer collaborator of the National Research Council (CNR), free of charge
- 2002 to now, registered in the expert register of the Education, University, Research Ministry for the Mineralogy and Environment topics
- 2002 to now, member of the evaluation expert panel of the research scientific products and examiner of the CIVR scientific products (Comitato di Indirizzo per la Valutazione della Ricerca)
- 2003 to now, peer reviewer of scientific papers for the following scientific review American Mineralogist, Anatomical Science International, Contributions to Mineralogy and Petrology, European Journal of Mineralogy, Periodico di Mineralogia, The Canadian Mineralogist, Waste Management
- 2006 to now, university associate to CNR – Geosciences and Geo-resources Institute, Torino section, research activity for the module “Geological material characterization and their use”
- 2007 to now, registered in the expert register for the evaluation of the Ministry research projects PRIN in the Mineralogy and Environment topics
- 2008 to now, member of the expert panel in the research, development, innovation and technological transfer of the Marche Region (I) in the Mineralogy, Environment, Inorganic Phases characterization topics
- 2009 to now, member of the expert panel in the research, development, innovation and technological transfer of the Emilia-Romagna Region (I) in the Mineralogy, Environment, Inorganic Phases characterization topics
- 2010 to now, member of the expert panel in the research, development, innovation and technological transfer of the Veneto Region (I) in the Mineralogy, Environment, Inorganic Phases characterization topics

The actual research activities (schematically listed below) embrace the following topics: 1) asbestos and other fibrous natural and synthetic minerals characterization (mineralogical-crystallographic and environmental circle); 2) new and rare minerals and mineral variety characterization (mineralogical-crystallographic and mineralogical-petrological circle).

- Study of fibrous mineral (some of them asbestos classified) contained in serpentinitic rocks from Western Alps, by X-ray powder diffractometry and transmission and scanning electron microscopy (knowledge on asbestiform carlosturanite and balangeroite minerals, discovered in these rocks, have been enlarged). The mapping and geo-referentiation until now realized shows that several fibrous specie are diffused and abundant. Besides the study showed that high resolution techniques (like TEM with EDS) need to discriminate among fibrous species similar to chrysotile asbestos and frequently with this intergrown, but not regulated by law (e.g. the polygonal serpentine and fibrous antigorite).

- Study of morphological, chemical and microstructural characteristics of natural fibrous silicates (not asbestos classified) and synthetic silicates both lamellar and fibrous, variously doped with metallic cations, to the understanding of the growth mechanisms, for the next evaluation of their toxicity or innocuity, and for eventual application studies. As an example, crystals of NI doped talc have been synthesized and characterized; it seems a good filler for several industrial applications. The conditions to obtain most developed lamellae having high cristallinity had: 1 kbar and 2 kbar in conditions of basicity and acidity respectively, with controlled temperature and time.

- Mineralogical characterization of fibrous variety of silicates (e.g. fibrous antigorite) and, in collaboration with biologic and toxicological researchers, bio-functionality tests have began. The data obtained until now show that fibrous antigorite has a weak toxicity.
- Identification of asbestos and several fibrous minerals (amphibole asbestos, serpentine group minerals, fibrous varieties of diopside and antigorite) by using Raman spectroscopy. The fibres were before univocally characterized with TEM-EDS, SEM-EDS, XRPD. This technique showed as a valid means for the fibres identification, also when the fibres are contained in cement.
- Study of inorganic fibres and particles airborne in urban and rural environments. The mineralogical characterization and quantification burden of different species allow either to evaluate pollution degree or determine the emission sources. It is especially useful for evaluating the risk for the public health and for intervention planning for the dispersion control.
- Mineralogical study of minerals and inorganic particles in biological tissues and fluids, in collaboration with medical and biologist researchers. The obtained data show that the identification of the mineralogical nature of particles and their concentration allow to advance a diagnosis, otherwise not possible, and to face up etiological studies. Besides, investigations on the interaction between fibrous minerals and biological tissues have begun.
- Investigation, identification and burden determination of the asbestos fibres in lung tissues of human but also of animals (it is easiest to collect these last). This study allows to correlate the areas where the fibres have been breathed with geological environments. The obtained data until now showed an high correlation between the fibrous lung burden from animal tissues and the fibrous minerals in rock outcropping in two valleys of the Piemonte Region (I).
- In collaboration with the Territory, Environment and Geotechnologies Department of the Torino Polytechnic, research devoted to characterize nanoscopic iron for reclamation of polluted ground water are being carried.

Author/coauthor of 50 papers on International and National peer reviewed scientific journals.
Coauthor of 127 communications presented in domestic and international congresses.

Convener/chairwomen of National and International congresses

- National Congress " AMIANTO: La sua storia..... L'importanza del sapere " Borgosesia (VC) 28-29 novembre 2008
- HE1 session "Asbestos Monitoring & Analytical Methods", 14° International Clay Conference, Castellaneta Marina (TA), 14-20 giugno 2009
- D 7 session - Il particolato minerale: origine, aspetti cristallografici, risvolti ambientali e sanitari, del 7° Forum Italiano di Scienze della Terra, Geoitalia 2009, Rimini 7-11 Settembre 2009
- Short course SC 3 "Particolato minerale: origine, campionamento, analisi, potenzialità di inquinamento e di rischio, risanamento", 7° Forum Italiano di Scienze della Terra, Geoitalia 2009, Rimini 7-11 Settembre 2009
- Seminar "Amianto: rischi ambientali e lavorativi", Grugliasco (TO) 27 maggio 2009 c/o la Facoltà di Veterinaria – Aula Informatica – Via Leonardo da Vinci, 44
- "World Asbestos Conference 2009", Taormina October 1-3, 2009

Winner of grants for study and research in Italy and abroad and worker contracts

- 2 CNR grants at the Torino University (1990 and 1991)
- 2 worker contracts for research on Antarctic (6 and 5 months in 1990 and 1991 respectively)
- Grant for post-PhD at the Torino University (October 1991 – October 1992)
- NATO-CNR Senior grant for 2 month research (January 1996) at Centre de Recherche sur les Mécanismes de la Croissance Cristalline (C.R.M.C.2) now Centre Interdisciplinaire de Nanoscience de Marseille (CINaM), Aix-Marseille 2 University (Luminy Science Faculty, Marsiglia, FR)

- CO.TRA.O. grant (Communauté des Travaux des Alpes Occidentales) for 6 month research (1997) at CINaM

Scientific and contribution responsible of the following projects

- CNR contribution "Altri interventi" for 120 days research at CINaM to carry researches by TEM-EDS on asbestos and fibrous minerals
- 2 CNR funds for international research stay (21 days) at CINaM (January 1996)

Local scientific responsible for the following National/International research projects

- 1996–1998, project on "Minerali da formazioni russe con particolare riferimento alle pegmatiti iperagpaitiche della penisola di Kola", special coordinate project "Distribuzione e proprietà dei minerali in relazione ai processi genetici e antropici" (CNR fund, Prof. C. Cipriani)
- 1998-2002, agreement between C.N.R. and Modulo Uno company to carry investigation by SEM e EDS on air and massiv samples containing asbestos and/or other fibres and/or noxious dusts
- 1999-2001, project on "Caratterizzazione a scala nanometrica tramite TEM di minerali fibrosi" (CNR fund for Italian side; Prof. A. Baronnet responsible for French side)
- 2000-2002, project on "Rilevazione di amianto e fibre inorganiche in manufatti, polveri, rocce, tessuti e liquidi biologici", MURST-COFIN 2000, prot. MM04038524_002 (Prof. N. Roveri national coordinator)
- 2000-2002, project on "Presenza di amianto e fibre inorganiche in popolazioni montane: conseguenze ambientali e sanitarie", ex-Istituto Nazionale per la Ricerca scientifica e tecnologica sulla Montagna fund (I.N.R.M.), now IMONT
- 2004-2006, project on "Caratterizzazione mineralogica e biofunzionale di minerali fibrosi", PRIN 2004, prot. 2004043224_002 (Prof. A. Gianfagna national coordinator)
- 2004-2005, project on "Indagine sulla presenza di amianto e altri minerali fibrosi in rocce del territorio della provincia di Vercelli", la Fondazione Cassa di Risparmio di Vercelli ha finanziato una borsa di ricerca
- 2005-2006, project on "Indagine sulla presenza di amianto e altri minerali fibrosi sul territorio della provincia di Vercelli" grant from Fondazione Cassa di Risparmio di Vercelli
- 2007-2008, project on "Proseguimento nella valutazione indiretta dell'inquinamento ambientale da amianto e fibre asbestiformi nel territorio della Valsesia tramite indagine di campioni biologico animali (polmoni) ed umani (urine)" grant from Fondazione Cassa di Risparmio di Vercelli
- 2007-2009, project on "Valutazione indiretta dell'inquinamento ambientale urbano da polveri minerali tramite indagini di campioni biologici" fund from Fondazione Compagnia di San Paolo
- 2009, project on "Caratterizzazione di fasi minerali naturali e sintetiche" grant form Fondazione Cassa di Risparmio di Vercelli
- 2009, project on "Caratterizzazione mineralogica e funzionale di anfiboli fibrosi Ca-Fe-magnesiaci" inserito nel Progetto Interdipartimentale "Ambiente – Salute ", CNR (PIAS-CNR) in the Programm agreement between the Environment and Protection Territory Ministry, Healthcare Ministry and CNR to carry an oriented project, in evaluation.