

Major Honours and Awards

- Doctor *honoris causa*, [Technical University of Mining and Metallurgy](#), Krakow, Poland, (2004);
- Doctor *honoris causa*, [University of Warmia and Mazury](#), Olsztyn, Poland, (2002);
- Foreign Member of the [Polish Academy of Sciences \(PAN\)](#), Warsaw, Poland, (2005);
- Life Member, Association of Professional Engineers and Geoscientists of New Brunswick, (2004);
- Life Member, [Canadian Institute of Geomatics](#), (2004-);
- Honorary Fellow, [Hong Kong Institute of Engineering Surveyors](#), (2002);
- Foreign Member of the [Polish Academy of Arts and Sciences \(PAU\)](#), (2001);
- Gold Medal of Merit awarded by the Ministry of Resources (Poland) for contributions to mining industry, (2000);
- Gold Medal of Merit awarded by the National Commission on Education (Poland) for contributions to education, (2000);
- Life Member [American Congress of Surveying and Mapping](#), (2000);
- 'Mining Sword', awarded by the Polish Ministry of Mining for significant contributions to the mining industry, (2000);
- Honorary Professor, [University of Warmia and Masuria](#), Poland, (1999);
- Knight's Cross of the Order of Merit (awarded by the President of Poland) for contributions to the scientific exchange and cooperation between Canadian and Polish universities, (1995);
- Medal of Appreciation by the PB/MK Team for contributions to the Superconducting Super Collider project in Texas, (1994);
- 'Mining Sword', awarded by the Polish Ministry of Mining for significant contributions to the mining industry, (1993);
- Professor Emeritus, [University of New Brunswick](#), (1998);
- Honorary Professor, [Wuhan Technical University of Surveying and Mapping](#), China, (1986);

Other Major Academic and Professional Activities

- Member of the Editorial Board, "Geodesy and Cartography", Polish Academy of Sciences, (2003-);
- Associate Editor of "Geomatica", Canada, (1968-);
- Editor advisor of the Acta Geodaetica et Cartographica Sinica, P.R. China (2000-);

- Associate Editor: "Technical Sciences", Poland, (2001-);
- Founder(1970) and chairman (1970-1975; 1998-) of the Canadian (CIG) Committee on Engineering and Mining Surveying;
- Co-founder (1976) and Presidium member (1976--) of the International Society for Mine Surveying (ISM);
- Chairman, International (FIG) Working Group 6.1 on Deformation Surveys (1988-);
- Chairman of the FIG Ad Hoc Committee on the Analysis of Deformation Surveys (1978-1988);
- Member, Special Commission SC4 (Applications of Geodesy to Engineering), IAG-Section I, (1991-);
- Advisor, Hong Kong Universities Panel on Research Grants, (1996-);
- Member, Assessment Committee of the Dept. of Land Surveying and Geo-Informatics, Hong Kong Polytechnic University, (1997-);
- Coordinator, scientific exchange program between UNB and Technical University of Warmia i Mazury, Poland, (1997-);
- Project Director, Cooperative Program between UNB and the Wuhan Technical University of Surveying and Mapping, China (1984-1988);
- Coordinator, scientific exchange program between U.N.B. and the Wuhan Technical University of Surveying and Mapping in P.R. China, (1983-1990);
- Consultant to the International Advisory Panel on Chinese Education, (1987);
- Advisor to Dam Engineering Conference, Kuala Lumpur, (1995);
- Advisor to the 8th International Symposium on Deformation Measurements, Hong Kong, (1996);
- Director and Chairman of the 1st and 5th and co-chairman of the 2nd, 3rd, 4th and 6th Canadian Symposia on Mining Surveying (Fredericton, 1969; Kingston, 1974; Sudbury, 1979; Banff, 1982, Fredericton 1988, Banff 1993);
- Co-organizer 7th, 9th, 10th, 11th and 12th International (FIG) Symposia on Deformation Surveys (Banff, Canada 1993; Olsztyn, Poland 1999; Orange, CA 2001; Santorini, Greece 2003; Austria 2006);
- Director and Chairman of the 5th International (FIG) Symposium on Deformation Surveys (Fredericton 1988);
- Co-organizer of the Workshop on Deformation Surveys (M.I.T. Cambridge, MA.), (1986);
- Co-organizer of the Workshop on Standards and Specifications for Integrated Survey Systems, Munich, Germany, (1977);

- Director and Chairman of the Brazilian Symposium on Engineering and Urban Surveys, Brasilia City, (1972);

Expeditions

- Member of the Mt. Kennedy mapping expedition (Yukon/Alaska) organized by the National Geographic Society, (1965).

Recent (1999 - 2004) and Current R & D and Industrial Projects

- Use of Pseudolites in hybrid monitoring systems and in underground navigation;
- Automation of deformation monitoring surveys using combination of robotic total stations with GPS and geotechnical sensors;
- Development and installation of an automated survey scheme for monitoring high wall deformations at the CODELCO Copper mines in Chile;
- Evaluation and enhancement of an automated survey scheme for monitoring high wall deformations at the Highland Valley Copper Mine and at the Elkview Mine in B.C., Canada;
- Monitoring and modeling of ground subsidence and dyke deformation in oil fields (PDVSA) in Venezuela;
- Conceptual design of an integrated scheme (levelling + tiltmeters) for deformation monitoring in a tunneling project in Pasadena, California (for Psomas Inc., USA);
- Conceptual design of a fully automated deformation monitoring scheme and software development the Diamond Valley Lake in California (for Metropolitan Water District of S. California);
- Evaluation of monitoring requirements due to oil withdrawal in the City of Long Beach, California (for Condor Earth Technologies USA);
- Ground subsidence monitoring, analysis, and numerical modelling - PCS potash mines in New Brunswick, Canada;
- Determination of rock stress from surface monitoring surveys at the KGHM Polish Copper mines in Poland;
- Software development and training - monitoring and analysis of dam deformations (for Los Angeles County Public Works Department);
- Design and implementation of a deformation monitoring scheme - Warsak Hydroelectric Power Station in Pakistan;
- Software development and training - monitoring of ground subsidence and structural deformations in oil fields (PDVSA) in Venezuela;

Summary of the past (1956-1998) R&D and major industrial projects and achievements

- 1968–** Development of a unique for North America university specialization in engineering and mining
1998 surveys at both undergraduate and graduate levels;
- 1985–** Development of a method (known as the S-C method) for numerical modeling and prediction of
1997 ground subsidence in mining areas (together with A. Szostak-Chrzanowski);
- 1991–** Design of geodetic control network and tunnelling surveys for the Superconducting Super Collider
1993 in Texas, USA;
- 1990–** Development of guidelines for deformation monitoring and analysis of large engineering structures
1993 for U.S. Army Corps of Engineers;
- 1997–** Evaluation and redesign of deformation monitoring surveys for 29 large dams in Los Angeles
1998 County, USA;
- 1997–** Design of accuracy requirements for a fully automated navigation system for a Mining Automation
1998 Project at INCO Inc. mines in Sudbury, Ont.;
- 1980–** Development of a generalized method (the UNB Generalized Method) for integrated deformation
1994 analysis in engineering and geosciences (together with Y.Q. Chen);
- 1987–** Development and implementation of a three-dimensional coordinating system for precision
1988 alignment and positioning surveys for industrial metrology (together with J. Secord and F. Wilkins);
- 1986–** Pioneering integration of GPS with terrestrial surveys in ground subsidence studies in oil fields in
1988 Venezuela;
- 1987–** Development of an automatic borehole scanning inclinometer for Syncrude Canada Inc. (together
1988 with A. Makosinski and W. Faig);
- 1984–** Development of a motorized system for trigonometric height traversing of high precision for
1987 Geodetic Survey of Canada;
- 1979–** Development of a radio-telemetric system for continuous monitoring of ground movements in
1982 Sparwood, B.C., Canada (together with B. Kurz, W. Faig and A. Makosinski);
- 1979–** Development of procedures for the optimal design of tunneling surveys;
1980
- 1976–** Design and analysis of horizontal and vertical control surveys in urban areas;
1979
- 1965–** Development and construction of prototypes of laser instruments of high precision for alignment
1978 surveys, mine orientation surveys (two models of laser plummets) and for levelling of high precision
(together with S. Masry, and F. Ahmed);
- 1967–** Research on drift in gyro-azimuth determination;
1970
- 1966–** Research on "ground swing" effects in microwave distance measurements;
1968
- 1964–** Research on optimal design of geodetic control surveys (concept of "triangulation");
1966
- 1960–** Use of EDM in mining surveys;
1964

1956– Analysis of sources of errors in mine orientation surveys and development of new devices for
1962 mechanical shaft plumbing;

Publications

- Over 350 published papers and book chapters on geodetic, engineering, urban, and mining surveys.
One patent granted: co-author: S. Masry, "Laser Optical Plummet," Canadian Patent No. 811923, 1969.

List of publications and more important reports 2000-2005

Szostak-Chrzanowski A., A. Chrzanowski, and M. Massiera (2005)

"Use of Geodetic Monitoring Measurements in Solving Geomechanical Problems in Engineering and Geosciences", *Engineering Geology*, Special Volume, Geodetic Techniques in Geological Deformation Studies", ed: S. Stiros and A. Chrzanowski, (accepted, in print).

Chrzanowski, A. and R. Wilkins (2005)

"Continuous Monitoring of Deformations in Open Pit Mines using Automated Geodetic Methods- Problems and Solutions", *Proceedings*, 6. Geomatics Tag, Freiberg, Germany, 12-13 May, (in print).

Bond, J., A. Chrzanowski, R. Wilkins (2005)

"Using GPS for augmenting deformation monitoring systems in open pit mines - problems and solutions" submitted to *Geomatica* (in print).

Bond, J., A. Chrzanowski, R. Wilkins (2004)

"Using GPS for augmenting deformation monitoring systems in open pit mines - problems and solutions" submitted to *Geomatica*.

Chrzanowski, A., A. Szostak-Chrzanowski (2004)

"Physical Interpretation of ground subsidence surveys - a case study". *Journal of Geospatial Engineering*, pp. 21-29.

Whitaker, C., A. Chrzanowski, S.K. Johansen, A. Kopicik, G.W. Roberts, S. Stiros, M. Tsakiri (2004)

"A report on the activities of Commission 6 (Engineering Surveys) of the International Federation of Surveyors (FIG)". *Proceedings of the ACSM Conference*, Nashville, Tennessee, April 16-21, 2004 (<http://www.acsm.net/04sessions.html>).

Kim, D., R.B. Langley, J. Bond, A. Chrzanowski (2003)

"Local deformation monitoring using GPS in an open pit mine: initial study". *GPS Solutions*, No.7, pp.176-185.

Chrzanowski, A, X. Ding, G. Roberst, C. Whitaker (2003)

"Goals and Achievements of FIG Working Group WG6.1 - Deformation Measurements and Analysis. *Proceedings*, FIG 11th International Symposium on Deformation Measurements, Santorini, Greece, May 25-28, pp. 5-14.

Wilkins, R., G. Bastin, A. Chrzanowski, W. Newcomen, L. Shwydiuk (2003)

"A fully automated system for monitoring pit wall displacements". *Mining Engineering* Vol. 56, No. 12, pp. 61-66.

Wilkins, R., G. Bastin, A. Chrzanowski (2003)

"ALERT: a Fully Automated Real Time Monitoring System". *Proceedings*, FIG 11th International Symposium on Deformation Measurements, Santorini, Greece, May 25-28, pp. 209-216.

Szostak-Chrzanowski A., A. Chrzanowski, and M. Massiera (2003)

"Use of Geodetic Monitoring Measurements in Solving Geomechanical Problems in Structural and Mining Engineering", *Proceedings*, FIG 11th International Symposium on Deformation Measurements, Santorini Island, Greece, May 25-28, pp.273 - 280.

Oszczak, S., A. Wasilewski, Z. Rzepecka, A. Chrzanowski, A. Szostak-Chrzanowski (2003)

"Ten Years of Deformation Study and Proposed Research Program for the area of Polish Copper Basin", *Proceedings*, FIG 11th International Symposium on Deformation Measurements, Santorini Island, Greece, May 25-28, pp. 327-333.

Wilkins, R., G. Bastin, A. Chrzanowski (2003)

"Monitoring of Structures and Steep Embankments: A Fully Automated Approach". *Proceedings* (CD-ROM), Annual Congress of the Canadian Society for Civil Engineering, Moncton, N.B., Canada, June 4-7, 10 p.

Szostak-Chrzanowski, A., M. Massiéra, A. Chrzanowski, F. Le Hoan, C. Whitaker (2002)

"Verification of Material Parameters of Earthen Dams at Diamond Valley Lake Using Geodetic Measurements" (in Farsi), *Mahab Ghodds Journal* (Iran), Issue No. 20, Fall 2002, pp. 24-32

Chrzanowski, A., A. Szostak-Chrzanowski, M. Massiéra, C. Whitaker (2002)

"Monitoring and Numerical Modelling of Deformations of Large Dams - a Case Study", *Technical Sciences*, Publisher: University of Warmia and Mazury, Olsztyn, pp. 47-60.

Massiéra, M., A. Szostak-Chrzanowski, A. Chrzanowski, and C. Whitaker (2002)

"Effet du remplissage du reservoir sur les tassements de grands barrages en remblai", *Proceedings*, 55th Annual Canadian Geotechnical Conference, 4-9 September, Niagara Falls, pp. 935-942.

Chrzanowski A. and A. Szostak-Chrzanowski, (2002)

"Use of Deformation Monitoring Measurements in Solving Geomechanical Problems", In: *Monograph in Honour of Petr Vaníček*, Department of Geodesy and Geomatics Engineering Technical Report No. , Ed. M. Santos, Fredericton, N.B., pp. 47-58.

Chrzanowski A. and G. Bastin (2002)

"2002 Results of Ground Subsidence Surveys in the Mining Area of PCS Potash Mine in New Brunswick", Report, Potash Corporation of Saskatchewan, New Brunswick Division.

Chrzanowski A. and A. Szostak-Chrzanowski (2002)

"Numerical Modelling of Ground Subsidence and Hydrological Changes in the Mining Area of Potash Corporation of Saskatchewan- N.B. Division near Sussex, New Brunswick, Report, Potash Corporation of Saskatchewan, New Brunswick Division.

Szostak-Chrzanowski A., M. Massiéra, A. Chrzanowski, F. Le Hoan (2002)

"Verification of design parameters of large earthen dams during the filling process", *Proceedings*, 2nd Canadian Specialty Conference on Computer Applications in Geotechnique, 28-30 April, Winnipeg, MB, pp 54-59.

Szostak-Chrzanowski A., M. Massiéra, A. Chrzanowski, C. Whitaker (2002)

"Verification of design parameters of large earthen dams using geodetic measurements", *Proceedings*, FIG 12th International Congress, 19-26 April, Washington, D.C., CDROM.

Massiéra, M., A. Szostak-Chrzanowski, A. Chrzanowski, C. Hill (2001)

"Évaluation des déformations d'un grand barrage en terre et en enrochement pendant sa mise en eau". *Proceedings of the 54th Canadian Geotechnical Conference and 2nd Joint IAH and CGS Groundwater Conference*, Calgary, Sept. 4-9. pp. 327-333.

Szostak-Chrzanowski, A., M. Massiéra, A. Chrzanowski, C. Hill (2001)

"Use of geodetic monitoring surveys in verifying design parameters of large earthen dams". *Proceedings* (CDROM) of the 10th Int. Symp. On Deformation Measurements (Metropolitan Water District of S. California). Orange, CA, March 19-22. Available at:

<http://rincon.gps.caltech.edu/FIG10sym/>

Duffy, M., C. Hill, C. Whitaker, A. Chrzanowski, J. Lutes, G. Bastin (2001)

"An automated and integrated monitoring program for Diamond Valley Lake in California". *Proceedings* (CDROM) of the 10th Int. Symp. on Deformation Measurements (Metropolitan Water District of S. California), Orange, CA, March 19-22. Available at:

<http://rincon.gps.caltech.edu/FIG10sym/>

Lutes, J., A. Chrzanowski, G. Bastin, C. Whitaker (2001)

"DIMONS software for automatic data collection and automatic deformation analysis". *Proceedings*

(CDROM), 10th International (FIG) Symposium on Deformation Measurements, (Metropolitan Water District of S. California), Orange, CA, March 19-22. Available at:

<http://rincon.gps.caltech.edu/FIG10sym/>

El-Rabbany, A., A. Chrzanowski, M. Santos (2001)

"GPS Applications in Civil Engineering" *The Ontario Land Surveyor*, Vol.44, No.2, pp. 6-8.

Chrzanowski, A. (2001)

"The 10th International Symposium on Deformation Measurements in Orange, California, March 2001" Report published in FIG Bulletin No. 73, July 2001, pp. 18-19.

Chrzanowski, A. (2001)

"10th International Symposium on Deformation Measurements", *Geomatica*, Vol. 55, No.3, pp. 404-405.

Chrzanowski, A. and G. Bastin (2001)

"Warsak Monitoring Project - Deformation Analysis Final Report 1997-2000", Report submitted to SNC-Shawinigan, Inc., 30 April 2001, 200 p.

Chrzanowski, A. (2000)

"9th International FIG Symposium on Deformation Measurements" in Olsztyn, Poland, September 27-30, 1999; *Geomatica*, Vol.54, No. 2, p. 206.

Chrzanowski, A. (2000)

"International Seminar in Honour of Dr. Teodor Blachut; a Cofounder of 20th Century Photogrammetry. *Geomatica*, Vol. 54, No.2 pp. 206-207.

Chrzanowski, A., A. Szostak-Chrzanowski, G. Bastin, J. Lutes (2000)

"Monitoring and modelling of ground subsidence in mining areas - case studies". *Geomatica*, Vol. 54, No.4, pp.495-413.

Whitaker, C., M. Duffy, and A. Chrzanowski (2000)

"Design of an automated dam deformation monitoring system: A case study". *Journal of Geospatial Engineering*, Vol.2, No.1, pp. 23-34.

Massiéra, M., A. Szostak-Chrzanowski, A. Chrzanowski, C. Whitaker (2000)

"Évaluation des déformations d'un grand barrage en remblai pour concevoir un système d'instrumentation géodésique". *Proceedings*, 53rd Canadian Geotechnical Conference of the Can. Geotechnical Society, 4-9 September, Montreal, pp. 247-254.

Chrzanowski, A., A. Szostak-Chrzanowski, S. Oszczak, Z. Rzepecka, A. Wasiliewski, E. Popiolek, R. Kurpinski (2000)

"Modeling of the rock mass behavior at KGHM Polish Copper mines". *Proceedings*, 11th International Congress of ISM, Krakow, September 4-8, pp. 301-310.

Consultant in engineering, mining, and geodetic surveys to the Potash Corporation of Saskatchewan, Canada; CODELCO, Chile; FOCUS Inc. Canada; Measurement Science Inc., Canada; the U.S. Army Corps of Engineers; Highland Valley Copper B.C., Canada; Canada; Elkview, Inc., B.C., Canada; PDVSA Petroleum Company, Venezuela, SNC-Lavalin, Canada; International Nickel Company, Sudbury, Canada; Metropolitan Water District of South California, USA; Genterra Consultants, Inc., Irvine, CA, USA; Canadian International Development Agency (CIDA); Psomes, Inc., USA; KGHM Polish Copper, Poland; N.B. Power, Canada.