POLITECNICO MILANO 1863

PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 2022_PRO_DENG_2 OF 12/04/2022 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 06/05/2022, n.36 FOR 1 POSITION AS FULL PROFESSOR FOR THE COMPETITION SECTOR 09/C2 - THERMAL SCIENCES, ENERGY TECHNOLOGY, BUILDING PHYSICS AND NUCLEAR ENGINEERING - SDS ING-IND/20 - NUCLEAR MEASUREMENTS AND INSTRUMENTATION, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF ENERGY (PROCEDURE CODE 2022_PRO_DENG_2).

FINAL REPORT

The Selection Board, appointed with RD Index No. 5619 ref. No. 140223 of 08 June 2022, composed by the following Professors:

Prof. GIULINI CASTIGLIONI AGOSTEO Stefano Luigi Maria - Politecnico di Milano;
Prof. ROZENFELD Anatoly B. - University of Wollogong, Australia;
Prof. GALLEGO DIAZ Eduardo Florentino - Universidad Politécnica de Madrid, Spagna,

met on 12 July 2022 at 9:00, for the first teleconference meeting.
Each board member was connected from his/her workstation.

At the start of the session the members of the Selection Board named the Chairman and the Secretary of the Selection Board:

GALLEGO DIAZ EDUARDO FLORENTINO, FULL PROFESSOR at the Universidad Politécnica di Madrid, Chairman;
GIULINI CASTIGLIONI AGOSTEO STEFANO LUIGI MARIA, FULL PROFESSOR at the Politecnico di Milano, Secretary.

Each member of the board declared not to have conjugal nor family relationship or other degree of kinship or affinity up to the fourth degree, not to be in same-sex civil union (as per art. 1 of Law No. 76 of 20.05.2016) and not to form a cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with the other members of this board and that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

The members of the Selection Board and the Secretary declared, pursuant to art. 35-bis of Legislative Decree 165/2001, not to have criminal convictions, even with non-definitive sentences, for offences provided for in Chapter I, Title II of the second book of the Criminal Code.

The Selection Board established the criteria and the parameters according to which the assessment was carried out, and set the minimum score below which the candidate shall not be included in the ranking of candidates.

On 20 July 2022 at 17:30, the Selection Board met for the second teleconference meeting to inspect the list of applicants, who were:

1) POLA Andrea

Each member of the board declared not to have conjugal nor family relationship or other degree of kinship or affinity up to the fourth degree, not to be in same-sex civil union (as per art. 1 of Law No. 76 of 20.05.2016) and not to form a cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with the candidates and stated that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

Pursuant to the examination and after adequate evaluation, the Selection Board assigned a score to each of the established criteria and a judgment to each publication submitted by the candidate; furthermore, the board evaluated the knowledge of the English language.

Therefore, the board, considering the sum of the scores given, expressed a collective judgment in relation to the quantity and the quality of publications, evaluating the overall productivity of the applicant, also with regard to his/her period of activity.

The above-mentioned judgments are attached to this report and they are an integral part of it (Attachment No. 1 to this final report).

The Selection Board drew up, according to the majority of its members, a ranking of candidates selected to carry out the scientific/teaching functions for which the selection was called, in a number equal to a maximum of five times the number of positions available in the competition (Attachment No. 2 to this final report).

THE SELECTION BOARD

Firmado por GALLEGO DIAZ EDUARDO FLORENTINO - DNI ***4628** el día 21/07/2022 con un certificado emitido por AC Sector Público

Prof. Eduardo GALLEGO DIAZ (Chairman) _____

Prof. Anatoly B. ROZENFELD (Member) Anatoly Rozenfeld

Prof. Stefano GIULINI CASTIGLIONI AGOSTEO (Secretary) _____

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ATTACHMENT No. 1 to the FINAL REPORT

CRITERIA	Quality of scientific and/or project production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference	Teaching activity at the university level in Italy or abroad	Scientific responsibility for funded research projects	Results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents	Total
POLA Andrea	35	30	12	15	92

CANDIDATE: POLA Andrea

CURRICULUM:

Andrea Pola graduated (MSc) with honours in Nuclear Engineering at the Politecnico di Milano in 2002. He gained his PhD with honours in Radiation Science and Technology at the Politecnico di Milano in 2006. In July 2006 he was enrolled as an Assistant Professor of Nuclear Measurements and Instrumentation (Academic discipline ING-IND/20) at the Department of Nuclear Engineering at the Politecnico di Milano. He won a call as an Associate Professor of Nuclear Measurements and Instrumentation in 2014 and since October 2014 he is on duty with this position at the Energy Department of the Politecnico di Milano. In November 2020 he gained the national scientific qualification as a Full Professor in the Academic Recruiting Field 09/C2 – Thermal Sciences, Energy Technology, Building Physics and Nuclear Engineering, Academic discipline ING-IND/20.

Since 2020, Andrea Pola is a member of the Board of professors of the PhD School in Energy and Nuclear Science and Technology of the Politecnico di Milano and he acts as the coordinator of the Nuclear Engineering Division of the Department of Energy of the Politecnico di Milano.

His main research activities are in the fields of radiation dosimetry, microdosimetry and nanodosimetry (main results: design and development of a pixelated monolithic silicon telescope for solid state microdosimetry and development of an avalanche confinement tissue-equivalent proportional counter simulating site sizes down to 25 nm), spectrometry of complex radiation fields (main results: recoil-proton neutron spectrometer based on a silicon telescope, active-converter spectrometer for direct high-resolution neutron spectrometry, DIAMON, an active neutron survey meter/spectrometer, combined PIXE/EDX via ultra-intense and ultra-high contrast lasers), radiation risk assessment in medical diagnostics (main results: first experimental evidence of concerns about the exposure of teenagers and young adults in emergency CT, new national recommendations on dental procedures, implementation of a multicentre cloud-based CT dosimetric database, review of the software for patient's organ and effective dose assessment in CT), commissioning and decommissioning of medical cyclotrons (main results: first decommissioning of a medical cyclotron at the National Cancer Institute in Milano, shielding design of the New Nuclear Medicine Ward "al Sadr Teaching Hospital" in Basra (Iraq), shielding design of the new proton-therapy facility of the European Institute of Oncology in Milano).

He is author/co-author of 99 publications on international ISI/SCOPUS journals, 21 publications on proceedings of international conferences, 5 on national conferences, 6 contributions to conferences and 11 scientific reports.

He is involved in many international/national research collaborations. He acted as a reviewer of international scientific journals of the field of radiation detection and dosimetry.
Since 2009 Andrea Pola is the professor of the course "Radioactivity" (5 ECTS) and since 2014 of the course "Laboratory of Physics of the Nucleus" (5 ECTS), in the framework of the Master Science programme in Nuclear Engineering of the Politecnico di Milano. He also gives lectures in the framework of the course "Radiation Protection and Instrumentation in Nuclear Systems" of the PhD programme in Energy and Nuclear Science and Technology at the Politecnico di Milano.

SUBMITTED PUBLICATIONS:

No. of publications	Type/Title of Publication	Judgment
1	F. Mirani, A. Maffini, F. Casamichiela, A. Pazzaglia, A. Formenti, D. Dellesega, V. Russo, D. Vavassori, D. Bortot, M. Huault, G. Zeraouli, V. Ospina, S. Malko, J.I. Apiñaniz, J.A. Pérez-Hernández, D. De Luis, G. Gatti, L. Volpe, **A. Pola**, M. Passoni, Integrated quantitative PIXE analysis and EDX spectroscopy using a laser-driven particle source, Science Advances 7 (2021) 1-11.	Excellent
2	**A. Pola**, D. Rastelli, M. Treccani, S. Pasquato, D. Bortot, DIAMON: A portable, real-time and direction-aware neutron spectrometer for field characterization and dosimetry, Nuclear Instruments and Methods A969 (2020) 164078-164085.	Excellent
3	D. Mazzucconi, D. Bortot, **A. Pola**, A. Fazzi, P. Colautti, V. Conte, G. Petringa, G.A.P. Cirrone, S. Agosteo, Nano-microdosimetric investigation at the therapeutic proton irradiation line of CATANA, Radiation Measurements 123 (2019) 26-33.	Excellent
4	**A. Pola**, R. Bedogni, C. Domingo, D. Bortot, J.M. Gomez-Ros, M.V. Introini, I. Martinez-Rovira, M. Romero-Exposito, M. Costa, Neutron spectrometry of a lightly encapsulated ^{241}Americium-Beryllium neutron source using two different Bonner Sphere Spectrometers, Nuclear Instruments and Methods A927 (2019) 371-374.	Very good
5	**A. Pola**, D. Corbella, A. Righini, A. Torresin, P.E. Colombo, I. Vismara, L. Trombetta, M. Maddalo, M.V. Introini, D. Tinelli, L. Strohmenger, G. Garattini, A. Munari, F. Triulzi, Computed tomography use in a large Italian region: trend analysis 2004-2014 of emergency and outpatient CT examinations in children and adults, European Radiology 28 (2018) 2308-2318.	Excellent
6	S. Agosteo, A. Fazzi, M.V. Introini, M. Lorenzoli, **A. Pola**, A telescope detection system for direct and high resolution spectrometry of intense neutron fields, Radiation Measurements 85 (2016) 1-17.	Excellent
7	H. Palmans, H. Rabus, A.L. Belchior, M.U. Bug, S. Galer, U. Giesen, G. Gonon, G. Gruel, G. Hilgers, D. Moro, H. Nettelbeck, M. Pinto, **A. Pola**, S. Pszona, G. Schettino, P.H.G. Sharpe, P. Teles, C. Villagrasa, J.J. Wilkens, Future development of biologically relevant dosimetry, British Journal of Radiology 88 (2015) 1045.	Excellent
8	S. Agosteo, **A. Pola**, Silicon microdosimetry, Radiation Protection Dosimetry 143 (2011) 409-415.	Very good
9	S. Agosteo, G.A.P. Cirrone, P. Colautti, G. Cuttone, G. D'Angelo, A. Fazzi, M.V. Introini, D. Moro, **A. Pola**, V. Varoli, Study of a silicon telescope for solid state microdosimetry: preliminary measurements at the therapeutic proton beam line of CATANA, Radiation Measurements 45 (2010) 1284-1289.	Excellent
10	A. Wroe, R. Schulte, A. Fazzi, **A. Pola**, S. Agosteo, A. Rosenfeld, RBE estimation of proton radiation fields using a ΔE-E telescope, Medical Physics 36 (2009) 4486-4494.	Excellent
11	S. Agosteo, P.G. Fallica, A. Fazzi, M.V. Introini, **A. Pola**, G. Valvo, A pixelated silicon telescope for solid state microdosimetry, Radiation Measurements 43 (2008) 585-589.	Very good
12	S. Agosteo, **A. Pola**, Analytical model for a monolithic silicon telescope. Response function of the E stage, Radiation Measurements 43 (2008) 1487-1492.	Excellent

Overall collective judgement

QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION, ASSESSED ON THE BASIS OF CRITERIA AND PARAMETERS RECOGNIZED BY THE INTERNATIONAL SCIENTIFIC COMMUNITY OF REFERENCE:

The publications selected by the candidate have been evaluated singularly by basing on criteria and parameters acknowledged by the reference scientific community (impact factor, number of citations, candidate's position in the author list). The evaluations are listed in the table of the previous section.

The scientific production is significant and continuous since 2003 and consisting of 99 publications on international ISI/SCOPUS journals, 21 publications on proceedings of international conferences, 5 on national conferences, 6 contributions to conferences and 11 scientific reports. He was a lecturer of many presentations at international conferences (3 invited talks).

The ISI Web of Knowledge citation report gives: (13 July 2022): h-index: 16, total number of citations: 860 (597 without self-citations). SCOPUS gives: h-index: 17, total number of citations: 894 (601 without self-citations).

The evaluation of the quality of the candidate's scientific production on the basis of criteria and parameters acknowledged by the reference scientific community is **excellent**. Points: **35**

DIDACTIC ACTIVITIES CARRIED OUT IN ITALIAN OR FOREIGN UNIVERSITIES OR BODIES:

The candidate's didactic activity is significant and continuous since 2002. His main didactic activity was performed in the framework of the Nuclear Engineering MS Course of the Politecnico di Milano.

From 2002 up to 2012: assistant of the course "Medical Applications of Radiation Fields";

since 2009: professor of the course "Radioactivity" (5 ECTS);

since 2014: professor of the course "Laboratory of Physics of the Nucleus" (5 ECTS).

Since 2013: he gives lectures in the framework of the course "Radiation Protection and Instrumentation in Nuclear Systems" of the PhD programme in Energy and Nuclear Science and Technology

He acted as a lecturer of several courses and seminars organized by international and national organizations. He supervised 15 MS thesis and 5 PhD Thesis.

He is a member of the study-plan commission of the course in Nuclear Engineering.

Since 2020, he is a member of the Board of professors of the PhD School in Energy and Nuclear Science and Technology.

He acted as a member of two evaluation boards of the final PhD exam at the Faculties of Science of the Universities of Berna and Basel and of one evaluation board of the final PhD exam at the Pisa University.

He was the tutor of an Early Stage Researcher (ESR) of the Marie Curie project ARDENT, funded by the European Community under the 7th Framework Programme.

The overall didactic activity is evaluated **very good**. Points: **30**

SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS:

Andrea Pola was the leader/coordinator of 1 project funded by the SPIRIT collaboration (7th European Framework Programme) and 1 national project (Non-Destructive Testing @ POLIMI), funded by the Department of Excellence.

He was/is the coordinator of the local units and/or working packages of 3 projects funded by the Istituto Nazionale di Fisica Nucleare (INFN), one funded by the Lombardia Region (PREP) and 2 projects funded by the EU (BIOQUART, NECTAR).

He was/is responsible for 6 research contracts funded by national companies/organizations.

Since 2017 he is a member of the board of the "Energy for motion" project, funded under the "Department of Excellence" call of the Italian Ministry of University and Research".

The overall evaluation is **very good**. Points: **12**

RESULTS OBTAINED IN TECHNOLOGY TRANSFER IN TERMS OF PARTICIPATION IN THE CREATION OF NEW ENTERPRISES (SPIN OFF), DEVELOPMENT, USE AND MARKETING OF PATENTS:

Andrea Pola is the main coordinator of RAYLAB, a spin-off company of the Politecnico di Milano, accredited in 2017. This company aims at designing and constructing new radiation detectors. The main product is the DIAMON spectrometer, which was designed and constructed within the candidate's research activities.

He is also the main inventor of the patent “active neutron spectrometer”, registered in Italy in 2020, currently under the international extension phase and issued by the US Patent and Trademark Office in January 2022. The overall evaluation is **excellent**. Points: **15**

SCRUTINY OF THE DEGREE OF KNOWLEDGE OF THE ENGLISH LANGUAGE:

The candidate’s degree of knowledge of the English language is **excellent** as it appears from his curriculum vitae (written in English, as requested by the call) and from the publications indicating the candidate as the first/last author and/or corresponding author. Moreover, the candidate possesses a certified level of proficiency in written and spoken English equivalent to CEF level C1 (highly proficient in spoken and written English).

THE SELECTION BOARD

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Prof. Anatoly B. ROZENFELD (Member) Anatoly Rozenfeld

Prof. Stefano GIULINI CASTIGLIONI AGOSTEO (Secretary) _____

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ATTACHMENT No. 2 to the FINAL REPORT

MERIT RANKING

SURNAME AND NAME	Overall score
POLA Andrea	92

Milan, 20 July 2022

THE SELECTION BOARD

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