



Prof. Setsuya Nakada  
Chair  
IAVCEI Nominations Committee

Barcelona, December 29, 2018

Dear Setsuya,

It is a pleasure nominate Dr. Fidel Costa for the IAVCEI Counsellor position for the term 2019-2023. Fidel is an exceptionally broadly trained and experienced volcanologist. He would well serve the interests of the volcanological community at large, as he has already demonstrated in all the activities related to volcanology that he has undertaken in the past and in particular as the current responsible for the WOVODat implementation and maintenance .

In particular his blend of top research in the areas of volcanic petrology and pre-eruptive processes are worthy of mention. He has increasingly managed to amalgamate these approaches to obtain more generalisable and comprehensive approaches to volcanic activity and in particular to improve the current knowledge on magma reservoirs, magma intrusion, crystallization and convection, and volatile degassing in volcanic conduits. The high level of his intellectual achievements is clear from his published record and needs little further comment.

His administrative and managerial experience is vast. He has co-ordinated highly successful research initiatives that have served as role models for the development national and international research programs. He has cultivated the scientific careers of a number of young scientists whose activities in the field of volcanology are admirable.

Finally, and perhaps most importantly, Fidel Costa has a remarkable personality, open at all times to all that is good and constructive. He never lets personal interests stand in the way of optimal progress. He would be a very valuable support to the new IAVCEI team.

With best wishes

Joan Martí

Singapore, January 2nd 2019

Prof. Setsuya Nakada  
Chair  
IAVCEI Nominations Committee

RE: Nomination for IAVCEI Executive Committee

Dear Setsuya,

It is my pleasure to accept to be nominated as candidate as IAVCEI Counsellor for the term 2019-2023. IAVCEI is the organization that I feel most closely attached for my research in general, but also because it groups scientists that care for the mitigation of volcano hazards. I was lucky enough to be honored by IAVCEI in 2013 with the Wager medal and I feel I should give back to the community; serving as a counselor is a good opportunity. One of the several aspects I'm thinking to push forward if I'm elected as counselor is to integrate the WOVOdat database project I have been leading for the last 5 years at EOS into the IAVCEI. WOVOdat is compiling all existing volcano monitoring data and has already developed strong links with other databases in Japan, Philippines, and Indonesia. The WOVOdat project is closely related to WOVO which does depend on IAVCEI, but has not been very active in the recent years.

Best regards,



Fidel Costa  
Associate Professor  
Associate Chair (Faculty)  
Asian School of the Environment (ASE)  
University Scholars Fellow  
Earth Observatory of Singapore (EOS)  
Nanyang Technological University  
email: [fcosta@ntu.edu.sg](mailto:fcosta@ntu.edu.sg)

**Name : Fidel Costa**

**Job Title : Assoc. Prof.**

**Researcher unique identifier: <https://orcid.org/0000-0002-1409-5325>**

**Webpage: <http://www.earthobservatory.sg/people/fidel-costa>**

#### **a) Professional Preparation**

|                           |  |
|---------------------------|--|
| Undergraduate Institution | University of Barcelona (1995) BSc Geology     |
| Graduate Institution      | University of Geneva (2000) PhD Earth Sciences |
| Postdoctoral Institution  | CNRS- Orleans, France, 2000-2002               |
| Postdoctoral Institution  | Ruhr-Universität Bochum, Germany, 2003-2006    |
| Postdoctoral Institution  | CSIC-Barcelona, Spain, 2007-2010               |

#### **b) Appointments**

|                  |  |
|------------------|--|
| 07/2018-present. | Associate Chair (Faculty) of Asian School of the Environment. Nanyang Technological University, Singapore.                         |
| 01/2017-06/2018. | Acting Chair of Asian School of the Environment. Nanyang Technological University, Singapore.                                      |
| 09/2015-12/2006. | Associate Chair (Faculty) of Asian School of the Environment. Nanyang Technological University, Singapore.                         |
| 09/2015-present. | Associate professor and Principal Investigator at the Earth Observatory of Singapore. Nanyang Technological University, Singapore. |
| 02/2010-08/2015. | Assistant professor and Principal Investigator at the Earth Observatory of Singapore. Nanyang Technological University, Singapore. |

#### **c) Publications in the last 4 years**

##### **2018**

Andersen, N., Singer, **Costa, F.** et al. (2018) Petrochronologic perspective on rhyolite volcano unrest at Laguna del Maule, Chile. *Earth and Planetary Science Letters* 493, 57-70.

Fabbro, G., Druitt, T., and **Costa, F.** (2018). Storage and Eruption of Silicic Magma across the Transition from Dominantly Effusive to Caldera-forming States at an Arc Volcano (Santorini, Greece). *Journal of Petrology*; doi: 10.1093/petrology/egy013.

Flaherty, T., Druitt, T., Tuffen, H., Higgins, M.D., **Costa, F.**, Cadoux, A. (2018): Multiple timescale constraints on magma chamber assembly prior to the Minoan caldera-forming eruption of Santorini (Greece). *Contributions to Mineralogy and Petrology* 173, 75; doi.org/10.1007/s00410-018-1490-1.

Liqing, J., Tapponnier, P., **Costa, F.**, et al (2018). Necking and fracturing may explain stationary seismicity and full degassing in volcanic silicic spine extrusion. *Earth and Planetary Science Letters* 503, 47-57.

Lynn, Shea, T., K. Garcia, M., **Costa, F.**, Norman, M.D. (2018) Lithium diffusion in olivine records priming of explosive basaltic eruptions. *Earth and Planetary Science Letters* 500, 127-135.

Ruth, D., **Costa, F.**, Bouvet de Maisonneuve, C., Franco, L., Cortés J.A., Calder, E. S (2018) Crystal and melt inclusion timescales reveal the evolution of magma migration before eruption. *Nature Communications* 9 : 2657, doi.org/10.1038/s41467-018-05086-8.

Zeng, L., Cheng, L., **Costa, F.#**, Herrin, J. (2018) CEMin: A MATLAB-based software for computational phenocryst extraction and statistical petrology. *Geochemistry, Geophysics, Geosystems*.

##### **2017**

Cooper, K.M., Till, C.B., Kent, A.J.R., **Costa, F.**, Rubin, A.E., Bose, M., Gravley, D., Deering, C., Cole J. (2017) Response to comment on "Rapid cooling and cold storage in a silicic magma reservoir recorded in individual crystals". *Science* 358, 10.1126/science.aap9145.

Rubin, A.E., Cooper, K.M., Till, C.B., Kent, A.J.R., **Costa, F.**, Bose, M., Gravley, D., Deering, C., Cole J. (2017) Rapid cooling and cold storage in a silicic magma reservoir recorded in individual crystals. *Science* 356, 1154–1156.

- Lynn, K. Garcia, M., Shea, T., **Costa, F.**, Swanson D.A. (2017): Timescales of mixing and storage for Keanakāko'i Tephra magmas (1500-1823 C.E.), *Contributions to Mineralogy and Petrology* 172:76 DOI 10.1007/s00410-017-1395-4.
- Newhall C., **Costa F.**, Ratdomopurbo A, Venezky D.Y., Widiwijayanti C, Nang Thin Zar Win, Tan K, Fajiculay E. (2017): WOVOdat – an online, growing library of worldwide volcanic unrest. *Journal of Volcanology and Geothermal Research* 345: 184-199.
- Marchev, P., Arai, S., Orlando, V., **Costa F.**, Zanetti, A., Downes H. (2017) Metasomatic Reaction Phenomena from Entrainment to Surface Cooling: Evidence from Mantle Peridotite Xenoliths from Bulgaria. *Journal of Petrology* 58: 599–640.
- Cheng, L., **Costa, F.**, and Carniel, R. (2017). Unraveling the presence of multiple plagioclase populations and identification of representative two dimensional sections using a statistical and numerical approach. *American Mineralogist* 102:1894-1905.
- Krimer, D. and **Costa F.** (2017) Evaluation of the effects of 3d diffusion, crystal geometry, and initial conditions on retrieved time-scales from Fe-Mg zoning in natural oriented orthopyroxene crystals. *Geochimica et Cosmochimica Acta*, 196: 271–288.

## 2016

- Singer, B., **Costa, F.**, Herrin, J.S., Hildreth, W., Fierstein, J. (2016) The timing of compositionally-zoned magma reservoirs and mafic 'priming' weeks before the 1912 Novarupta-Katmai rhyolite eruption. *Earth and Planetary Science Letters*. 451, 125-137.
- Bouvet de Maisonneuve, C., **Costa, F.**, Huber, C., Vonlanthen, P, Bachmann, O., Dungan. M. (2016) How do olivines record magmatic events? Insights from major and trace element zoning. *Contributions to Mineralogy and Petrology*, 171, 10.1007/s00410-016-1264-6.
- Albert, H., **Costa F.**, Marti, J. (2016) Years to weeks of seismic unrest and magmatic intrusions precede monogenetic eruptions. *Geology* 44, 211-214.

## 2015

- Kahl, M., Chakraborty, S., Pompillio, M., **Costa, F.** (2015) Constraints on the nature and evolution of the magma plumbing system of Mt. Etna volcano (1991 – 2008) from a combined thermodynamic and kinetic modelling of the compositional record of minerals. *Journal of Petrology* 56: 2025-2068.
- Girona, T., **Costa, F.**, Schubert, G. (2015): Degassing during quiescence as a trigger of magma ascent and volcanic eruptions. *Scientific Reports* 5: 18212 | DOI: 10.1038/srep18212.
- Albert, H., **Costa F.**, Marti, J. (2015) Timing of magmatic processes and unrest associated with mafic historical monogenetic eruptions in Tenerife Island. *Journal of Petrology* 56: 1945-1966.
- Bouvet de Maisonneuve, C., **Costa, F.**, Patia, H., Huber, C. (2015): Unrest and eruption in a caldera setting: Insights from the 2006 eruption of Rabaul (Papua New Guinea). *Geological Society of London, Special publications*. 422, doi.org/10.1144/SP422.2
- Shea, T., **Costa F.**, Hammer, J., Krimer, D. (2015) Accuracy and precision of timescales retrieved from diffusion modeling in olivine: a 3D perspective. *American Mineralogist* 100, 2026-2042.
- Belousov, A., Belousova, M., Krimer, D., **Costa, F.**, Zaenuddin, A., Prambada, O. (2015): Volcaniclastic stratigraphy of Gede volcano, West Java, Indonesia: how it erupted and when. *Journal of Volcanology and Geothermal Research* 310, 238-252.
- Fontijn, K., **Costa, F.**, Sutawidjaja, I., Newhall, C., Herrin, J. (2015) A five thousand year record of multiple highly explosive mafic eruptions from Gunung Agung (Bali, Indonesia): Implications for eruption frequency and volcanic hazards. *Bulletin of Volcanology* 77.
- Girona, T., **Costa, F.**, Taisne, B., Aggangan, B., Ildefonso, S. (2015) Fractal degassing from Erebus and Mayon volcanoes revealed by a new method to monitor H<sub>2</sub>O emission cycles. *Journal of Geophysical Research*, doi:10.1002/2014JB011797.

### (d) Supervision of Graduate Students and Postdoctoral Fellows

\*Post-doctoral mentoring of H. Albert (NTU, EOS, 2016-currently). Main topic: Volcanic unrest and magmatic processes at Mt Fuji (Japan).

\*Post-doctoral mentoring of R.I. Made (NTU, NRF, 2017-currently). Main topic: Exsolution lamellae in pyroxenes as a record of thermal histories of magmas.

\*Post-doctoral mentoring of L. Cheng (NTU, EOS, 2015-currently). Main topic: Statistical Petrology.

\*Post-doctoral mentoring of D. Ruth (NTU, EOS, 2015-2017). Now researcher at United States Geological Survey (Menlo Park, US).

\*Post-doctoral mentoring of C. Bouvet de Maisonneuve (NTU, EOS,). Now Assist. Prof at ASE (NTU).

#### *Current PhD students*

\*PhD student co-advisee w/ Prof. Tim White (MSE): W. Li (NTU, DES, Start: 2014). PhD topic: ' Time scales and magmatic processes of Merapi volcano, Indonesia'. IGS NTU program.

\*PhD student advisee: Sri Budhi Utami (NTU, ASE, start: 2016). PhD topic: Understanding magma plumbing system and unrest of Kelut volcano, Indonesia.

\*PhD student advisee: Damia Bonet (NTU, ASE, start: 2018). PhD topic: Unravelling the sources of volcanic ash and their use in anticipating major eruptions.

#### *Graduated PhD students*

\*PhD student co-advisee (w/ P. Tapponnier): J. Liqing (NTU, ASE, 2011-2016). PhD topic: ' Discrete Element Modeling of Continental Deformation and Volcanic Spine Extrusion'. Now RF at EOS.

\*PhD student advisee: D. Krimer (NTU, ASE, 2010-2015). PhD topic: ' Geochemistry and Petrology of Gede volcano, Indonesia'. Springer *Best PhD award* in 2016.

\*PhD student advisee: A. Winson (NTU, ASE, 2010-2016). PhD topic: ' Alert level Analysis and eruption forecasts at open vent volcanoes'. Now Researcher at British Geological Survey (UK).

\*Ph.D. student advisee T. Girona (NTU, DES, 2010-2014). PhD topic 'Numerical modeling of permanent degassing volcanoes'. Now Post-doctoral fellow at JPL (US). American Geophysical Union Graduate *Research Award of Natural Hazards* section 2016.

#### **(e) Memberships of Scientific Societies and Commissions of Trust (if applicable)**

\*Associate Editor of Journal of Volcanology and Geothermal Research

\*Associate Editor of 'Geologica Acta'

\*Associate Editor of 'Geochemistry, Geophysics, Geosystems'

\*Associate Editor of 'American Mineralogist'

#### **(f) Awards and fellowships**

2000. Marie Curie Fellow (EU).

2009. Ramon y Cajal Fellow (Spain).

2013- Wager Medal, by the International Association of Volcanology and Chemistry of the Earth's Interior (awarded on 20th July 2013, Kagoshima, Japan). The medal is given every two years to a scientist up to 15 years after Ph.D acquisition, who has made outstanding contributions to volcanology, particularly in the eight-year period prior to the Award. [http://www.iaucei.org/IAUCEI\\_awards/wagner\\_IAUCEI.htm](http://www.iaucei.org/IAUCEI_awards/wagner_IAUCEI.htm)

2016- Fellow of the University Scholars Program (USP) of NTU.

2017- National Research Foundation Investigator (Singapore).



**Shanaka de Silva, Ph.D. Professor of Geology and Geophysics**

**College of Earth, Ocean, and Atmospheric Sciences**

Oregon State University

104 CEOAS Admin Building □ Corvallis, Oregon 97331-5506

Tel: (541) 737-1212 □ Fax: (541) 737-1200 □ [www.geo.oregonstate.edu](http://www.geo.oregonstate.edu)

Professor Setsuya Nakada  
Chair  
IAVCEI Nominations Committee

6<sup>th</sup> January 2019

Dear Prof. Nakada,

It is with great pleasure that I write in full support for the nomination of Fidel Costa for a position on the Executive Committee of IAVCEI. Fidel is one of our leading young volcanologists as recently recognized by IAVCEI with the Wager Medal in 2013, and his desire to give back to the society is admirable. He comes well qualified. His work on petrological constraints on rates of magmatic processes and pre-eruptive evolution of magmas is both ground-breaking and creative. In his position at the Earth Observatory of Singapore, he has been a mentor for many early career volcanologists and he has expended significant energy on efforts to develop an integrated volcanology group across SE Asia. His platform issue of integrating the WOVOdat database project that he currently leads with WOVO and the associated IAVCEI WOVO commission is a critical one. The IAVCEI WOVO commission has lacked direction and leadership in the last decade and is not achieving its potential. Fidel's plan will inject much needed energy and direction to these entities and give IAVCEI a more prominent and integrative role in the volcano observatory community. I give his nomination my full support.

Your truly,

A handwritten signature in black ink, appearing to read 'Shanaka de Silva', with a stylized flourish at the end.

Prof. Shanaka de Silva  
Vice President, IAVCEI



**Prof. Setsuya Nakada**  
**Chair**  
**IAVCEI Nominations Committee**

**Santiago, January 2019**

Dear Dr. Nakada,

It is my pleasure to nominate Dr. Fidel Costa for the IAVCEI Counsellor position 2019-2023. Fidel is global scientist, a positive leader and an outstanding collaborator in research projects. There is no doubt about his engagement with the scientific community and beyond, and his work with WOVODat is an example of his ability to manage complex endeavors with exceptional results. Fidel's skills as a scientist are well-known and there is no need to extend on that; his strong academic background and the long list of influential articles are self-explaining. Contributions in the fields of petrology and pre-eruptive processes, recently combined with monitoring data are moving the limits of our current knowledge in volcanology.

But beyond his high-level academic profile, Fidel is first a kind colleague, a team player, an open-mind scientist and a remarkable mentor for a growing number of young scientists. I am pretty sure that he would be a very valuable support to the new IAVCEI team.

With kind regards,

**Luis E. Lara**  
**Geologist, Dr.Sc.**  
**SERNAGEOMIN**



---

Institut de Physique du Globe de Paris  
1 rue Jussieu, 75005 Paris, France  
Patrick ALLARD, Directeur de recherche CNRS émérite  
Tél: (+33)-1 83 95 76 30 - E-mail: [pallard@ipgp.fr](mailto:pallard@ipgp.fr)

---

Date: 01/01/2018

To: Prof. Setsuya Nakada, Chair of Nominations Committee for IAVCEI EC 2019-2023

Object: Support Letter to the nomination of Prof. Fidel COSTA as Counsellor

Dear Setsuya,

I am very happy to recommend the nomination of Prof. Fidel Costa as Counsellor in the Executive Committee of IAVCEI for the term 2019-2013.

Fidel ranks amongst the most talented and productive volcanologists of his generation. His international trajectory has been quite emblematic, with a Ph.D in Switzerland, several post-doc stays in France, Germany then Spain and, in 2010-2015, a recruitment as Assistant Professor at the Earth Observatory of Singapore (EOS), in the Nanyang Technological University (NTU). Since 2015 he has been Associate professor in EOS and also acted in 2017-2018 as Chair of the Asian School of the Environment at NTU.

Over more than a decade now, Fidel Costa has promoted and developed precursory studies of the kinetics of magmatic and volcanic processes, by looking at the diffusion profiles of selected elements across zoned crystal phases in volcanic rocks. Without hesitation one can say that Fidel has become the 'pope' of this new field of research in Volcanology, in which he trained younger scientists and attracted various colleagues. This remarkable contribution led IAVCEI to award him with the Wager Price in 2013.

But Fidel also demonstrated a much broader scientific curiosity and has gained a great experience in volcanic hazard assessment. In particular, he has been actively involved in the implementation and maintenance of the WOWO Database, of which he is currently responsible. The high intellectual achievements of Fidel Costa is reflected in his publication list, his scientific distinctions, his responsibilities, and widespread international collaborations. I had the opportunity to directly collaborate with him during visiting stays in EOS. I can attest of his great intellectual capabilities and his great availability to young PhDs and post-docs in his Institute.

In summary, the scientific experience, international leadership and personal qualities of Fidel Costa fully justify his nomination as counsellor in the IAVCEI Executive Committee for the term 2019-2023.

P. ALLARD  
Vice-President IAVCEI