

## FRANCIS NIMMO

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## RESEARCH ACHIEVEMENTS

- Used gravity and topography to probe the internal structures of Titan and Enceladus
- Proposed reorientation to explain the locations of the hot spot on Enceladus and Sputnik Planitia on Pluto
- Proposed a link between plate tectonics and the presence/absence of a dynamo on Mars, Venus and the Earth

## EDUCATION

1993-96 PhD *Volcanism and tectonics on Venus*, St John's College, Cambridge University

1990-93 BA Geological sciences (1st class honours), St John's College, Cambridge University

## EMPLOYMENT

2011 - present Professor, UCSC

2007 - 2011 Associate Professor, UCSC

2005 - 2007 Assistant Professor, UCSC

2004 - 2005 Assistant Professor in Residence, UCLA

2002 - 2004 Adjunct Assistant Professor, UCLA

2001 - 2004 Royal Society University Research Fellow, University College London

1999 - 2001 Visitor, California Institute of Technology

1998 - 2001 Junior Research Fellowship, Magdalene College, Cambridge University

1997 - 1998 Post-doctoral research assistant, Cambridge University

## AWARDS ETC.

2019 Harold Jeffreys Lectureship, Royal Astronomical Society

2018 Paolo Farinella Prize

2015 Overseas Visiting Scholarship, St John's College, Cambridge

2011 Japan Society for the Promotion of Science Visiting Fellow

2011 Merle A. Tuve Visiting Fellow, Carnegie Institute of Washington

2007 Macelwane medal of the American Geophysical Union

2007 Urey prize of the Division of Planetary Sciences

2001 President's Award, Geological Society of London

1998-01 Junior Research Fellowship, Magdalene College, Cambridge

## PROFESSIONAL ACTIVITIES

2018- *InSight* Participating Scientist

2016- Editor, *Icarus*

2014- Team member of EIS, E-THEMIS and REASON instruments on *Europa Clipper*

2014- *New Horizons* embedded collaborator

2012- *Cassini* Participating Scientist

2012- GRAIL Guest Scientist

2009-2010 National Academies' Planetary Decadal Survey (Satellites panel)

2006-2009 National Academies' Committee on Lunar and Planetary Exploration (COMPLEX)

2006 National Academies' Committee on Mars Exploration Architecture

2003-2015 Associate Editor, *J. Geophys. Res. Planets*

## SELECTED PUBLICATIONS

- Nimmo, F., O.M. Umurhan, C.M. Lisse et al., Mean radius and shape of Pluto and Charon from New Horizons images, *Icarus* **287**, 12-29, 2017.
- Nimmo, F., D.P. Hamilton, W.B. McKinnon et al., Reorientation of Sputnik Planitia implies a subsurface ocean on Pluto, *Nature* **540**, 94-96, 2016.
- Badro, J., J. Siebert, F. Nimmo, An early geodynamo driven by exsolution of mantle components from the Earth's core, *Nature* **536**, 326-328, 2016.
- Chen, E.M.A., F. Nimmo, G.A. Glatzmaier, Tidal heating in icy satellite oceans, *Icarus* **229**, 11-30, 2014.
- Hemingway, D., F. Nimmo, H. Zebker, L. Iess, A rigid and weathered ice shell on Titan, *Nature* **500**, 550-552, 2013.
- Spencer, J.R., F. Nimmo, Enceladus: An active ice world in the Saturn system, *Ann. Rev. Earth Planet Sci.* **41**, 693-717, 2013.
- Tarduno, J.A., R.D. Cottrell, F. Nimmo, J. Hopkins, J. Voronov, A. Erickson, E. Blackman, E.R.D. Scott, R. McKinley, Evidence for a dynamo in the main group pallasite parent body, *Science* **338** 93-95, 2012.
- Dwyer, C.A., D.J. Stevenson, F. Nimmo, A long-lived lunar dynamo driven by continuous mechanical stirring, *Nature* **479** 212-214, 2011.
- Nimmo, F., B.G. Bills, P.C. Thomas, Geophysical implications of the long-wavelength topography of the Saturnian satellites, *J. Geophys. Res.* **116** E11001, 2011.
- Garrick-Bethell, I., F. Nimmo, M.A. Wieczorek, Structure and formation of the lunar farside highlands, *Science* **330**, 949-951, 2010.
- Nimmo, F., Energetics of asteroid dynamos and the role of compositional convection, *Geophys. Res. Lett.* **36**, L10201, 2009.
- Kleine, T., M. Touboul, B. Bourdon, F. Nimmo, K. Mezger, H. Palme, Q.-Z. Yin, S.B. Jacobsen, A.N. Halliday, Hf-W chronometry and the accretion and early evolution of asteroids and terrestrial planets, *Geochim. Cosmochim. Acta* **73**, 5150-5188, 2009.
- Nimmo, F., S.D. Hart, D.G. Korycansky, C.B. Agnor, Implications of an impact origin for the Martian hemispheric dichotomy, *Nature* **453** 1220-1223, 2008.
- Roberts, J.H. and F. Nimmo, Tidal heating and the long-term stability of a subsurface ocean on Enceladus, *Icarus* **194** 675-689, 2008.
- Nimmo, F., J.R. Spencer, R.T. Pappalardo, M.E. Mullen, Shear heating as the origin of the plumes and heat flux on Enceladus, *Nature* **447** 289-291, 2007.
- Nimmo, F. and R.T. Pappalardo, Diapir-induced reorientation of Saturn's moon Enceladus, *Nature* **441**, 614-616, 2006.
- Nimmo, F. and K. Tanaka, Early crustal evolution of Mars, *Ann. Rev. Earth Planet. Sci.* **33**, 133-161, 2005.
- Nimmo, F., G.D. Price, J. Brodholt, D. Gubbins, The influence of potassium on core and geodynamo evolution, *Geophys. J. Int.*, **156**, 363-376, 2004.
- Nimmo, F. and M. Manga, Causes, characteristics and consequences of convective diapirism on Europa, *Geophys. Res. Lett.*, **29**(23), 2109, 10.1029/2002GL015754, 2002.
- Nimmo, F., Why does Venus lack a magnetic field?, *Geology*, **30**, 987-990, 2002.
- Gaidos, E. and F. Nimmo, Tectonics and water on Europa, *Nature* **405**, 637, 2000.
- Nimmo, F. and D. Stevenson, The influence of early plate tectonics on the thermal evolution and magnetic field of Mars, *J. Geophys. Res.* **105**, 11969-11979, 2000.
- Nimmo, F., Dike intrusion as a possible cause of linear Martian magnetic anomalies, *Geology* **28**, 391-394, 2000.
- McKenzie, D. and F. Nimmo, The generation of Martian floods by melting permafrost above dykes, *Nature* **397**, 231-233, 1999.
- Nimmo, F. and D. McKenzie, Volcanism and tectonics on Venus, *Ann. Rev. Earth Planet. Sci.* **26**, 23-51, 1998.