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RESEARCH INTERESTS

Origin and evolution of solid body surfaces and interiors from observations and geophysical modelling.

RESEARCH ACHIEVEMENTS

- Used gravity and topography to probe the internal structures of Titan, Rhea 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

EMPLOYMENT

2011- Professor, UCSC
2007-2011 Associate Professor, UCSC
2005-2007 Assistant Professor, UCSC
2002-2005 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 Fellow, Magdalene College, Cambridge University
1997-1998 Post-doctoral research assistant, Cambridge University

EDUCATION

1993-1996 Ph.D. Volcanism and tectonics on Venus, Cambridge University
1990-1993 BA Geological sciences (1st class honours), Cambridge University

AWARDS

2020 Elected to National Academy of Sciences
2019 Harold Jeffreys lectureship, Royal Astronomical Society
2018 Paolo Farinella prize
2007 Macelwane medal, American Geophysical Union
2007 Urey prize, Division of Planetary Sciences, American Astronomical Society
2001 President's Award, Geological Society of London

SELECTED PROFESSIONAL ACTIVITIES

2019-present Editor, *AGU Advances*
2018-present *InSight* Participating Scientist
2016-2019 Editor, *Icarus*
2015- present Member on E-THEMIS, REASON and EIS instruments for *Europa Clipper*
2012-2018 Participating Scientist on *Cassini* and *GRAIL*; *New Horizons* embedded collaborator
2009-2010 National Academies' Planetary Decadal Survey member (satellites panel)
2006-2009 National Academies' Committee on Planetary and Lunar Exploration
2003-2015 Associate Editor, *J. Geophys. Res. Planets*
2003-present Series Editor, Cambridge University Press Planetary Science series

PUBLICATIONS (*denotes a student, ^ a post-doc)

- [206] T. Kleine, G. Budde, C. Burkhardt, T.S. Kruijter, E.A. Worsham, A. Morbidelli, **F. Nimmo**, The Non-Carbonaceous--Carbonaceous meteorite dichotomy, *Space Sci. Rev.* **216**, 55, 2020.
- [205] Giardini, D., P. Lognonne, W.B. Banerdt et al., The seismicity of Mars, *Nature Geosci.*, **13**, 205-209, 2020.
- [204] Banerdt, W.B., S.E. Smrekar, D. Banfield et al. Initial results from the InSight mission on Mars, *Nature Geosci.*, **13**, 183-186, 2020.
- [203] Lognonne, P., W.B. Banerdt, W.T. Pike et al., Constraints on the shallow elastic and anelastic structure of Mars from InSight seismic data, *Nature Geosci.* **13**, 213-216, 2020.
- [202] Tarduno, J.A., R.D. Cottrell, R.K. Bonon, H. Oda, W.J. Davis, M. Fayek, O. van't Erve, **F. Nimmo**, W. Huang, E.R. Thern, S. Fearn, Paleomagnetism indicates that primary magnetite in zircon records a strong Hadean geodynamo, *Proc. Nat. Acad. Sci.* **117** 2309-2318, 2020.
- [201] Spencer, J.R., W.M. Grundy, **F. Nimmo**, L.A. Young, The Pluto system after New Horizons, in *The Trans-Neptunian Solar System*, Prialnik, Barucci, Young eds., Elsevier, pp. 271-288, 2020.
- [200] ^Tian, Z., **F. Nimmo**, Implications of second-order resonance for the thermal and orbital evolution of Mimas, *Mon. Not. R. Astron. Soc.* **492**, 369-376, 2020.
- [199] de Kleer, K., **F. Nimmo**, E. Kite, Variability in Io's volcanism on timescales of periodic orbital changes, *Geophys. Res. Lett.*, **46**, <https://doi.org/10.1029/2019GL082691>, 2019.
- [198] *Zube, N.G., **F. Nimmo**, R.A. Fischer, S.A. Jacobson, Constraints on terrestrial planet formation timescales and equilibration processes in the Grand Tack scenario from Hf-W isotopic evolution, *Earth Planet. Sci. Lett.* **522**, 210-218, 2019.
- [197] *Conrad, J.W., **F. Nimmo**, P. Schenk et al., An upper bound on Pluto's heat flux from a lack of flexural response of its normal faults, *Icarus* **328**, 210-217, 2019.
- [196] *Bierson, C.J., **F. Nimmo**, Using the density of Kuiper Belt Objects to constrain their composition and formation history, *Icarus*, **326**, 10-17, 2019.
- [195] Kamata, S., **F. Nimmo**, Y. Sekine et al. Pluto's ocean is capped and insulated by gas hydrates. *Nature Geoscience* **12**, 407-410, 2019.
- [194] *Abrahams, J.A.N.H., **F. Nimmo**. Ferrovulcanism: iron volcanism on metallic asteroids. *Geophys. Res. Lett.* **46**, 5055-5064, 2019.
- [193] Neufeld, J.A., J.F.J. Bryson, **F. Nimmo**, The top-down solidification of iron asteroids driving dynamo evolution. *J. Geophys. Res.* **124**, 1331-1356, 2019.
- [192] Young, E.D., A. Shahar, **F. Nimmo**, H.E. Schlichting, E.A. Schauble, H. Tang, J. Labidi, Near-equilibrium isotope fractionation during planetesimal evaporation, *Icarus* **323** 1-15, 2019.
- [191] Beyer, R.A., J.R. Spencer, W.B. McKinnon, **F. Nimmo** et al. The nature and origin of Charon's smooth plains, *Icarus* **323** , 16-32, 2019.
- [190] Nanne, J.A.M., **F. Nimmo**, J.N. Cuzzi, T. Kleine, Origin of the non-carbonaceous-carbonaceous meteorite dichotomy, *Earth Planet. Sci. Lett.* **511** , 44-54, 2019.
- [189] **Nimmo, F.**, I. Matsuyama, Tidal dissipation in rubble-pile asteroids, *Icarus* , **321**, 715-721, 2019.
- [188] Bono, R.K., J.A. Tarduno, **F. Nimmo**, R.D. Cottrell, Young inner core inferred from Ediacaran ultra-low geomagnetic field intensity, *Nature Geosci.* **12** 143-147, 2019.
- [187] *Conrad, J.W., **F. Nimmo**, C.I. Fassett, S. Kamata, Lunar impact history constrained by GRAIL-derived basin relaxation measurements, *Icarus* , **314** , 50-63, 2018.

- [186] **Nimmo, F.**, A.C. Barr, M. Behoukova, W.B. McKinnon, The thermal and orbital evolution of Enceladus: observational constraints and models in *Enceladus and the icy moons of Saturn*, P.M. Schenk, R.N. Clark, C.J.A. Howett, A.J. Verbiscer, J.H. Waite, eds., Univ. Ariz. Press, pp.79-94, 2018.
- [185] Spencer, J.R., **F. Nimmo**, A.P. Ingersoll, T.A. Hurford, E.S. Kite, A.R. Rhoden, J. Schmidt, C.J.A. Howett, Plume origins and plumbing: from ocean to surface in *Enceladus and the icy moons of Saturn* P.M. Schenk, R.N. Clark, C.J.A. Howett, A.J. Verbiscer, J.H. Waite, eds., Univ. Ariz. Press, pp. 163-174, 2018.
- [184] Fischer, R.A., **F. Nimmo**, Effects of core formation on the Hf-W isotopic composition of the Earth and dating of the Moon-forming impact, *Earth Planet. Sci. Lett.* , **499**, 257-265, 2018.
- [183] Matsuyama, I., M. Beuthe, H.C.F. Hay, **F. Nimmo**, S. Kamata Ocean heating in icy satellites with solid shells *Icarus* , **312**, 208-230, 2018.
- [182] Ding, M., J.M. Soderblom, C.J. Bierson* et al. Constraints on lunar crustal porosity from the gravitational signature of impact craters, *J. Geophys. Res. Planets* , **123** , 2281-2294, 2018.
- [181] **Nimmo, F.**, K. Kretke, S. Ida, S. Matsumura, T. Kleine Transforming dust to planets, *Space Sci. Rev.* **214**, 2018.
- [180] *Bierson, C.J., **F. Nimmo**, W.B. McKinnon Implications of the observed Pluto-Charon density contrast *Icarus* , **309**, 207-219, 2018.
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- [177] Fischer, R.A., **F. Nimmo**, D.P. O'Brien, Radial mixing and Ru-Mo isotope systematics under different accretion scenarios *Earth Planet. Sci. Lett.* , **482** 105-114, 2018.
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- [166] **Nimmo, F.**, R.T. Pappalardo Ocean worlds in the outer solar system, *J. Geophys. Res.*, **121** 1378-1399, 2016.
- [165] *Bierson, C.J., R.J. Phillips, **F. Nimmo**, J. Besserer, C. Milbury, J.T. Keane, J.M. Soderblom, M.T. Zuber Interactions between complex craters and the lunar crust: Analysis using GRAIL data *J. Geophys. Res.*, **121** 1488-1497, 2016.
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- [147] Kamata, S., I. Matsuyama, **F. Nimmo**, Tidal resonance in icy satellites with subsurface oceans, *J. Geophys. Res.* **120** doi:10.1002/2015JE004821, 2015.
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- [138] Lefort, A., D.M. Burr, **F. Nimmo**, R.E. Jacobsen Channel slope reversal near the Martian dichotomy boundary: Testing tectonic hypotheses, *Geomorphology* **240** 121-136, 2015.

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- [136] *Peterson, G., **F. Nimmo**, P. Schenk, Elastic thickness and heat flux estimates for the Uranian satellite Ariel *Icarus* **250** 116-122, 2015.
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- [127] ^Besserer, J., **F. Nimmo**, M.A. Wieczorek, R.C. Weber, W.S. Kiefer, P.J. McGovern, J.C. Andrews-Hanna, D.E. Smith, M.T. Zuber GRAIL gravity constraints on the vertical and lateral density structure of the lunar crust, *Geophys. Res. Lett.* **41**, doi:10.1002/2014GL060240, 2014.
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