

# INDEXES TO VOLUME 374 (A)

## *Author index*

- Agrell, S. O. *See* Hutchison, Bevan, Easton & Agrell.
- Anders, E. Noble gases in meteorites: evidence for presolar matter and superheavy elements, 207.
- Ashworth, J. R. Fine structure in H-group chondrites, 179.
- Barnsley, M. & Cornille, H. General solution of a Boltzmann equation, and the formation of Maxwellian tails, 371.
- Bevan, A. W. R. *See* Hutchison, Bevan, Easton & Agrell.
- Beynon, J. H. *See* Harris, Mukhtar, Griffiths & Beynon.
- Booker, H. G. *See* Uscinski, Booker & Mariani.
- Breuer, R. A. & Ehlers, J. Propagation of high-frequency electromagnetic waves through a magnetized plasma in curved space-time. II. Application of the asymptotic approximation, 65.
- Chowdhury, D. *See* Sastry & Chowdhury.
- Cornille, H. *See* Barnsley & Cornille.
- Davidson, W. & McCrea, W. H. Atomic and gravitational metrics in cosmology, 447.
- Durrani, S. A. Track record in meteorites, 239.
- Easton, A. J. *See* Hutchison, Bevan, Easton & Agrell.
- Eastwood, M. G. On the twistor description of massive fields, 431.
- Ehlers, J. *See* Breuer & Ehlers.
- Enright, M. C. *See* Reed & Enright.
- Goodrich, F. C. The theory of capillary excess viscosities, 341.
- Gray, P., Griffiths, J. F., Hasko, S. M. & Lignola, P.-G. Oscillatory ignitions and cool flames accompanying the non-isothermal oxidation of acetaldehyde in a well stirred, flow reactor, 313.
- Griffiths, I. W. *See* Harris, Mukhtar, Griffiths & Beynon.
- Griffiths, J. F. *See* Gray, Griffiths, Hasko & Lignola.
- Hanstead, P. D. Simplified digital synthesis of ultrasonic images, 491.
- Hargreave, M. M. *See* Sato, Lowde, Saunders & Hargreave.
- Harley, R. T. *See* Lowde, Harley, Saunders, Sato, Scherm & Underhill.
- Harris, F. M., Mukhtar, E. S., Griffiths, I. W. & Beynon, J. H. Design of a high-resolution mass spectrometer for studying the photodissociation of organic ions in the gas phase, 461.
- Hasko, S. M. *See* Gray, Griffiths, Hasko & Lignola.
- Hide, R. & Malin, S. R. C. On the determination of the size of the Earth's core from observations of the geomagnetic secular variation, 15.
- Howe, M. S. The role of displacement thickness fluctuations in hydroacoustics, and the jet-drive mechanism of the flue organ pipe, 543.
- Hutchison, R., Bevan, A. W. R., Easton, A. J. & Agrell, S. O. Mineral chemistry and genetic relations among H-group chondrites, 159.
- Hutchison, R. Introductory remarks (meteoritic research), 157.
- Jones, C. F., Segall, R. L., Smart, R. St. C. & Turner, P. S. Initial dissolution kinetics of ionic oxides, 141.

- Kelly A. & McCartney, L. N. Failure by stress corrosion of bundles of fibres, 475.
- Lignola, P.-G. *See* Gray, Griffiths, Hasko & Lignola.
- Lobo, M. & Sachdev, P. L. Some direct numerical approaches to the solution of the singular nonlinear transonic integral equation, 35.
- Lowde, R. D. *See* Sato, Lowde, Saunders & Hargreave.
- Lowde, R. D., Harley, R. T., Saunders, G. A., Sato, M., Scherm, R. & Underhill, C. On the martensitic transformation in f.c.c. manganese alloys. I. Measurements, 87.
- McCartney, L. N. *See* Kelly & McCartney.
- McCrea, W. H. *See* Davidson & McCrea.
- Malin, S. R. C. *See* Hide & Malin.
- Marians, Marilyn. *See* Uscinski, Booker & Marians.
- Meadows, A. J. Links between meteorites and asteroids, 271.
- Mukhtar, E. S. *See* Harris, Mukhtar, Griffiths & Beynon.
- Musgrave, M. J. P. On an elastodynamic classification of orthorhombic media, 401.
- Pellas, P. & Storzer, D.  $^{244}\text{Pu}$  fission track thermometry and its application to stony meteorites, 253.
- Phan-Thien, N. On the effect of parallel and transverse stationary random surface roughness in hydrodynamics lubrication, 569.
- Reed, S. J. B. & Enright, M. C. Trace element distributions in meteorites determined by ion probe analysis, 195.
- Sachdev, P. L. *See* Lobo & Sachdev.
- Sastry, G. P. & Chowdhury, D. Cherenkov radiation in spatially dispersive media, 531.
- Sato, M. *See* Lowde, Harley, Saunders, Sato, Scherm & Underhill.
- Sato, M., Lowde, R. D., Saunders, G. A. & Hargreave, M. M. On the martensitic transformation in f.c.c. manganese alloys. II. Phenomenological analysis, 115.
- Scherm, R. *See* Lowde, Harley, Saunders, Sato, Scherm & Underhill.
- Segall, R. L. *See* Jones, Segall, Smart & Turner.
- Smart, R. St C. *See* Jones, Segall, Smart & Turner.
- Storzer, D. *See* Pellas & Storzer.
- Saunders, G. A. *See* Lowde, Harley, Saunders, Sato, Scherm & Underhill; *also* Sato, Lowde, Saunders & Hargreave.
- Todd, Lord. Address of the President at the Anniversary Meeting, 1 December 1980, 1.
- Turner, G. Argon-Argon age measurements and calculations of temperatures resulting from asteroidal break-up, 281.
- Turner, P. S. *See* Jones, Segall, Smart & Turner.
- Underhill, C. *See* Lowde, Harley, Saunders, Sato, Scherm & Underhill.
- Uscinski, B. J., Booker, H. G. & Marians, Marilyn. Intensity fluctuations due to a deep phase screen with a power-law spectrum, 503.
- Zeldovich, Y. B. On the friction of fluids between rotating cylinders, 299.

## *Subject*

Address of the President at the Anniversary meeting, 1 December 1980, 1.

Boltzmann equation, its general solution and the formation of Maxwellian tails, 371.

Bundle failure due to stress corrosion, 475.

Capillary excess, 341.

Cherenkov radiation in spatially dispersive media, 531.

Cosmology, atomic and gravitational metrics, 447.

Deep phase screen with a power-law spectrum, 503.

Dissolution kinetics of ionic oxides, 141.

Earth's core: on the determination of its size from observations of the geomagnetic secular variation, 15.

Elastodynamics of orthorhombic media, 401.

Geomagnetic secular variation: on the determination of the size of the Earth's core from observations of, 15.

Hydroacoustics, role of displacement thickness fluctuations, 543.

Hydrodynamic lubrication, 569.

Intensity fluctuations from a deep phase screen, 503.

Martensitic transformation, 87, 115.

Mass spectrometer for photo-dissociation studies, 461.

Maxwellian tails, formation of, in the general solution of the Boltzmann equation, 371.

Meteoritic research, Discussion; for detailed contents see p. 155.

Metrics in cosmology, atomic and gravitational, 447.

Non-isothermal oxidation of acetaldehyde, 313.

Nonlinear singular integral equations, 35.

Organ pipe, theory of jet-drive mechanism, 543.

Orthorhombic media, elastodynamics, 401.

Oscillatory ignitions and cool flames, 313.

Oxide dissolution kinetics, 141.

Phase transformation, 87, 115.

Photodissociation of organic ions in a mass spectrometer, 461.

Rotating fluid turbulence and friction, 299.

Spatially dispersive media – Cherenkov radiation in, 531.

Stress corrosion failure of fibre bundles, 475.

Surface roughness in hydrodynamic lubrication, 569.

Synthetic aperture ultrasonic imaging, 491.

Transonic flow, 35.

Turbulence in overstabilized flow, 299.

Twistor description of massive fields, 421.

Ultrasonic imaging, 491.

Viscosity, surface, 341.

Wave propagation in plasmas in curved space-time, 65.

END OF THE THREE HUNDRED AND SEVENTY-FOURTH VOLUME (SERIES A)

PROCEEDINGS OF  
THE ROYAL SOCIETY  
OF LONDON

SERIES A

VOLUME 374

MATHEMATICAL AND PHYSICAL SCIENCES

1981

PUBLISHED BY THE ROYAL SOCIETY  
6 CARLTON HOUSE TERRACE LONDON SW1Y 5AG

The four numbers in this volume can be obtained separately from  
the Royal Society, 6 Carlton House Terrace, London SW1Y 5AG.

# CONTENTS

## SERIES A VOLUME 374

NUMBER 1756 7 JANUARY 1981

Address of the President, Lord Todd, O.M., at the Anniversary Meeting, 1 December 1980.	<i>page 1</i>
On the determination of the size of the Earth's core from observations of the geomagnetic secular variation. By R. Hide, F.R.S., and S. R. C. Malin	15
Some direct numerical approaches to the solution of the singular nonlinear transonic integral equation. By M. Lobo and P. L. Sachdev	35
Propagation of high-frequency electromagnetic waves through a magnetized plasma in curved space-time. II. Application of the asymptotic approximation. By R. A. Breuer and J. Ehlers	65
On the martensitic transformation in f.c.c. manganese alloys. I. Measurements. By R. D. Lowde, R. T. Harley, G. A. Saunders, M. Sato, R. Scherm and C. Underhill	87
On the martensitic transformation in f.c.c. manganese alloys. II. Phenomeno- logical analysis. By M. Sato, R. D. Lowde, G. A. Saunders and M. M. Hargreave	115
Initial dissolution kinetics of ionic oxides. By C. F. Jones, R. L. Segall, R. St. C. Smart and P. S. Turner. [Plates 1 and 2]	141

NUMBER 1757 4 FEBRUARY 1981

### METEORITIC RESEARCH

A DISCUSSION ARRANGED BY THE BRITISH NATIONAL COMMITTEE  
ON SPACE RESEARCH UNDER THE LEADERSHIP OF  
SIR HARRIE MASSEY, F.R.S., R. HUTCHISON, F.R.S.,  
AND G. M. BROWN, F.R.S.,

Introductory remarks. By R. Hutchison, F.R.S.	157
Mineral chemistry and genetic relations among H-group chondrites. By R. Hutchison, F.R.S., A. W. R. Bevan, A. J. Easton and S. O. Agrell. [Plate 1]	159
Fine structure in H-group chondrites. By J. R. Ashworth. [Plates 1-4]	179
Trace element distributions in meteorites determined by ion probe analysis. By S. J. B. Reed and M. C. Enright	195
Noble gases in meteorites: evidence for presolar matter and superheavy elements. By E. Anders	207
Track record in meteorites. By S. A. Durrani. [Plate 1]	239

<sup>244</sup> Pu fission track thermometry and its application to stony meteorites. By P. Pellas and D. Storzer	253
Links between meteorites and asteroids. By A. J. Meadows	271
Argon-argon age measurements and calculations of temperatures resulting from asteroidal break-up. By G. Turner	281

## NUMBER 1758 4 FEBRUARY 1981

On the friction of fluids between rotating cylinders. By Y. B. Zeldovich, For Mem.R.S.	299
Oscillatory ignitions and cool flames accompanying the non-isothermal oxidation of acetaldehyde in a well stirred, flow reactor. By P. Gray, F.R.S., J. F. Griffiths, S. M. Hasko and P.-G. Lignola	313
The theory of capillary excess viscosities. By F. C. Goodrich	341
General solution of a Boltzmann equation, and the formation of Maxwellian tails. By M. Barnsley and H. Cornille	371
On an elastodynamic classification of orthorhombic media. By M. J. P. Musgrave	401
On the twistor description of massive fields. By M. G. Eastwood	431

## NUMBER 1759 9 FEBRUARY 1981

Atomic and gravitational metrics in cosmology. By W. Davidson and W. H. McCrea, F.R.S.	447
Design of a high-resolution mass spectrometer for studying the photodissociation of organic ions in the gas phase. By F. M. Harris, E. S. Mukhtar, I. W. Griffiths and J. H. Beynon, F.R.S.	461
Failure by stress corrosion of bundles of fibres. By A. Kelly, F.R.S., and L. N. McCartney	475
Simplified digital synthesis of ultrasonic images. By P. D. Hanstead	491
Intensity fluctuations due to a deep phase screen with a power-law spectrum. By B. J. Uscinski, H. G. Booker and Marilyn Mariani	503
Cherenkov radiation in spatially dispersive media. By G. P. Sastry and D. Chowdhury	531
The role of displacement thickness fluctuations in hydroacoustics, and the jet-drive mechanism of the flue organ pipe. By M. S. Howe	543
On the effect of parallel and transverse stationary random surface roughness in hydrodynamics lubrication. By N. Phan-Thien	569
Indexes	593