



FROMAGE
(FRiends
Of Marine
AuthiGENesis)

Proposed IAS Special Publication

**Authigenic minerals: sedimentology,
geochemistry, origins, distribution
and applications**



INTERNATIONAL ASSOCIATION
OF SEDIMENTOLOGISTS

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THIS volume is based on a selection of papers presented at April 2006 IAS-sponsored EGU Session SSP11 *Authigenic Minerals*, with additional invited submissions.

OUTLINE: Authigenic minerals precipitated *in situ* at, or close to, the sediment/water interface are widespread in the geological record, yet in many cases remarkably little is known about their origin, and exact modern analogues are poorly known or have yet to be identified.

Authigenic minerals incorporate a remarkable range of mineral associations, including:

Phosphates: phosphate-rich sediments and phosphorites.

Clay minerals, zeolites and associated minerals: green clays: verdine, glauconite; palagonite, smectite, phillipsite, barite.

Authigenic carbonates: associations with methane and cold seeps; microbial dolomites in lagoonal and oceanic environments.

Iron deposits: ferromanganese deposits, iron crusts, iron sulphides (pyrite, marcasite, iron monosulphides), ironstones.

Each authigenic mineral suite has its own unique character, but overarching themes include the microbiology of authigenic processes, and linked spatial and temporal variation in authigenic mineral suites. Occurrences of authigenic minerals have applications to sequence stratigraphy and modelling sea-level change, and palaeoenvironmental analysis (interpretations of sedimentation rate, carbon burial flux, bottom-water oxygenation, current energy, bioturbation rate, porewater redox), and they provide evidence of global environmental changes in marine palaeoproductivity, biogeochemical cycles, and ocean-atmosphere interaction.

FORMAT: Manuscripts should be prepared in the format of *Sedimentology* (<http://www.blackwellpublishing.com/journal.asp?ref=0037-0746&site=1>). **The Special Publication will be produced in a new large *Sedimentology*-sized format, and will offer full-colour figures throughout at no cost to authors.**

Three printed copies of manuscripts, including high quality versions of all figures, should be sent to: *Dr Ian Jarvis, School of Earth Sciences & Geography, Kingston University London, Penrhyn Road, Kingston upon Thames KT1 2EE, UK*

All manuscripts will be assessed by the editors and two external referees, and will be subject to the same rigorous reviewing procedure as submissions to an international scientific journal.

DEADLINE: 30 September 2006 (NOW EXTENDED, Contact the Editors)

Submissions confirmed

- Al-Juboury, A.** Authigenic palygorskite in the Middle Miocene rocks of Iraq: environmental and geochemical indicators
- Al-Juboury, A.** Feldspar and silica authigenesis in the Carpathian Keuper dolostones, Slovakia
- Amorosi, A.** The occurrence of glaucony in the stratigraphic record: distribution patterns and sequence-stratigraphic significance
- Attree, K.; Jarvis, I.; Mortimer, R.N.** Preliminary study of a new Upper Cretaceous phosphatic chalk deposit in southern England
- Berner, Z.; Pujol, F.; Neumann, T.; Kramar, U.; Stüben, D.; Racki, G.; Simon, R.** Contrasting trace element composition of diagenetic and syngenetic pyrites: implications for the depositional environment
- Glenn, C.; Jarvis, I.** Phosphorite geochemistry: a review
- Glenn, C.R.; Soudry, D.; Nathan, Y.** Palaeoceanography of Tethyan Campanian-Maastrichtian phosphorites as deduced from the N and C isotopic composition of associated organic matter
- Goette, Th.; Richter, D.K.** REE-activated cathodoluminescence of micro apatites in glauconite of Cretaceous sandstones: high resolution spectrometric analyses of CL emission.
- Harwood, C.; Rogers, R.** Authigenesis in vertebrate fossils on a marine sequence boundary in the Upper Cretaceous Judith River Formation of north-central Montana, USA
- Küster, K.; de Lange, G.J.; Schulz-Vogt, H.N.; Zabel, M.** Phosphorus cycle and phosphorite formation in marine sediments of high productivity areas
- März, C.; Kasten, S.; Bleil, U.; Hoffmann, J.; de Lange, G.** Early diagenetic effects on magnetic and geochemical signals in sediments of the Zambezi deep-sea fan (SW Indian Ocean) - a case study
- Nathan, Y.; Soudry, D.; Glenn, C.; Shenker, M.; Huang, X.L.; Schilman, B.** Organic carbon to organic phosphorus ratios in sediments from a Cretaceous-Eocene sequence in an upwelling continental margin, Negev, Israel: implications for giant phosphorites and the oceanic phosphorus cycle
- Neumann, T.; Ostermaier, M.; Kramar, U.; Simon, R.** Formation of framboidal pyrite in estuarine sediments of the Achterwasser lagoon, SW Baltic Sea, and implications on trace metal mobility
- Peyaud, J.-B.; Worden, R.H.** Evolution through time of the impact of sediment ingestion by lugworms (*Arenicola marina*) on sediment mineralogy: a 3-year experiment
- Piper, D.Z.; Perkins, R.B.; Rowe, H.D.** Rare-earth elements and trace metals as proxies of palaeo-redox and palaeo-primary productivity for the Phosphoria Formation - a marine phosphate deposit of Permian age
- Rajan, S.; Glenn, C.** Authigenic siderite-chalk precipitation in the Plio-Pleistocene Black Sea
- Soudry, D.; Nathan, Y.** Geochemical and textural diagenetic trends during phosphorite formation: the case of the Campanian Mishash phosphorites, Negev, southern Israel.
- Zanin, Yu.; Eder, V.; Zamirailova, A.** Mn-carbonates, glauconites and phosphorites in the Upper Jurassic Georgiev Formation of the West Siberian Basin
- Zanin, Yu.; Zamirailova, A.** Uranium in supergene phosphorites

Potential submissions – awaiting reply from authors

- Belien, H.; Vanlierde, E.; Mostaert, F.; Jacobs, P.** A preliminary study of the flocculation of iron-bound sediment in a Belgian river

- Bodin, S.; Godet, A.; Föllmi, K.B.** Phosphogenesis and silicification associated to condensation events: an example from the Hauterivian – Barremian transition along the northern Tethyan margin (Helvetic realm, Switzerland)
- Compton, J.S.; Wigley, R.A.** History of the Benguela Upwelling System since the Oligocene inferred from phosphorite deposits on the western margin of southern Africa
- Fazio, A.M.; Scasso, R.A.; Castro, L.N.; Carey, S.** Rare earth geochemistry and phosphogenesis in the Miocene of Patagonia, Argentina
- Konhauser, K.O.; Newman, D.K.; Kappler, A.** The Bacterial Role in BIF Diagenesis
- Law, G; Shimmield, T; Shimmield, G; Cowie, G; Breuer, E.** Sedimentary iron and manganese biogeochemistry through the Arabian Sea oxygen minimum zone
- Lualdi, A.; Pasquini, C. ; Decarlis, A.; Vercesi, P.L.** Geochemical characteristics of glauconites as indicators of depositional environment: examples from the Vocontian basin
- Manheim, F.** Phosphorite in drill cores off the Georgia shelf (USA): formation and multi-stage transformation of primary pellets formed within foraminiferal tests
- Oliveri, E.; Bellanca, A.; Neri, R.; Riding, R.** Fossil microbial events in the Messinian Calcare di Base Formation from Sutera, Caltanissetta Basin, Sicily
- Rividi, N.; Orberger, B.; Karim, A.; Vachard, D.** Origin of authigenic phosphates in siliciclastic and carbonate rocks
- Rubinstein, N. ; Fazio, A.; Scasso, R. ; Carey, S.** Genesis of phosphatic deposits in marine tuffs from Patagonia, Argentina
- Taylor, K.; Burns, F.** Iron-rich authigenic minerals in Lower Cretaceous transgressive shallow marine greensands, NW Shelf, Western Australia: an integrated diagenetic, ichnological and sedimentological analysis
- Taylor, K.; Gawthorpe, R.** Extensive early diagenetic carbonate cementation of fluvial successions, Upper Cretaceous, Book Cliffs, Utah: an example of large-scale detrital carbonate remobilisation
- Wang, Y.; Yang, J.H.; Zhu, D.K.** River-sea interaction during the formation of the North Jiangsu Plain, China: a multi-analysis of sedimentology, geochemistry and authigenic minerals from the Baoying borehole
- Wigley, R.A.; Compton, J.S.** Condensed authigenic mineral cemented surfaces from the western margin of South Africa in relation to late Oligocene/early Miocene sea-level fluctuations
- Worden, R.H.; Haddad, S.C.** Origin of quartz cement in silcretes in the Fontainebleau sandstone: a study using infrared-microspectrometry, EBSD, CL and TEM

7 June 2006