

Original article

Conodont biostratigraphy of the Upper Devonian–Lower Carboniferous
Shahmirzad section, central Alborz, Iran[☆]Biostratigraphie des conodontes du Dévonien supérieur–Carbonifère
inférieur de la coupe de Shahmirzad, Alborz central, IranTahereh Habibi^a, Carlo Corradini^{b,*}, Mehdi Yazdi^a^a Department of Geology, Faculty of Sciences, University of Isfahan, Isfahan, Iran^b Dipartimento di Scienze della Terra, Università di Cagliari, via Trentino 51, 09127 Cagliari, Italy

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Abstract

The conodont fauna from the Devonian–Carboniferous Shahmirzad section, located in the Central Alborz Mountains (North Iran), have been studied mainly for biostratigraphic purposes. Some levels were barren of conodonts, whereas others yielded a not very abundant, but quite differentiated fauna. No conodonts have been found from the mainly terrigenous and shaly Geirud Formation, whereas representative of genera *Bispathodus*, *Clydagnathus*, *Gnathodus*, *Hindeodus*, *Mehlina*, *Polygnathus*, *Protognathodus*, *Pseudopolygnathus* and *Siphonodella* have been collected from the mainly calcareous overlying Mobarak Formation. The fauna allowed to discriminate five biointervals, from the *sulcata* Zone to a “Lower *typicus* – *anchoralis-latus* interval” in the central part of the section, while the lower and upper parts cannot be zoned on the basis of conodonts. This paper is the first report on lowermost Carboniferous conodonts from the Mobarak Formation in central Alborz.

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Résumé

La faune à conodontes de la coupe dévono-carbonifère de Shahmirzad, située dans la partie centrale des Montagnes de l'Alborz (Nord de l'Iran), a été étudiée essentiellement pour des raisons biostratigraphiques. Seulement certains niveaux ont fourni une faune à conodontes peu abondante mais assez diversifiée. Aucun conodonte n'a été livré par les dépôts terrigènes de la Formation de Geirud ; en revanche, des représentants des genres *Bispathodus*, *Clydagnathus*, *Gnathodus*, *Hindeodus*, *Mehlina*, *Polygnathus*, *Protognathodus*, *Pseudopolygnathus* et *Siphonodella* ont été extraits des niveaux principalement calcaires de la Formation sous-jacente de Mobarak. Cette faune a permis de définir cinq bio-intervalles, depuis la Zone à *sulcata* jusqu'à l'intervalle « *typicus* inférieur – *anchoralis-latus* ». Cet article documente pour la première fois la présence de conodontes de la base du Carbonifère dans la Formation de Mobarak dans le Alborz central.

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Keywords: Conodonts; Biostratigraphy; Late Devonian; Early Carboniferous; Iran**Mots clés :** Conodontes ; Biostratigraphie ; Dévonien supérieur ; Carbonifère inférieur ; Iran

1. Introduction

Upper Devonian and Lower Carboniferous sequences are quite widespread throughout Iran. These sequences crop out in

structurally isolated units of different terranes, which are a part of the Iranian microplate (Wendt et al., 2005). Iran is structurally and palaeotectonically subdivided into several provinces (Berberian and King, 1981) (Fig. 1):

- Kope-Dagh, in north-east Iran, represented by the remnants of the Turan Plate, which was part of Laurussia;
- Central Iran, south of the suture zone, which is a mosaic of various Palaeozoic blocks;

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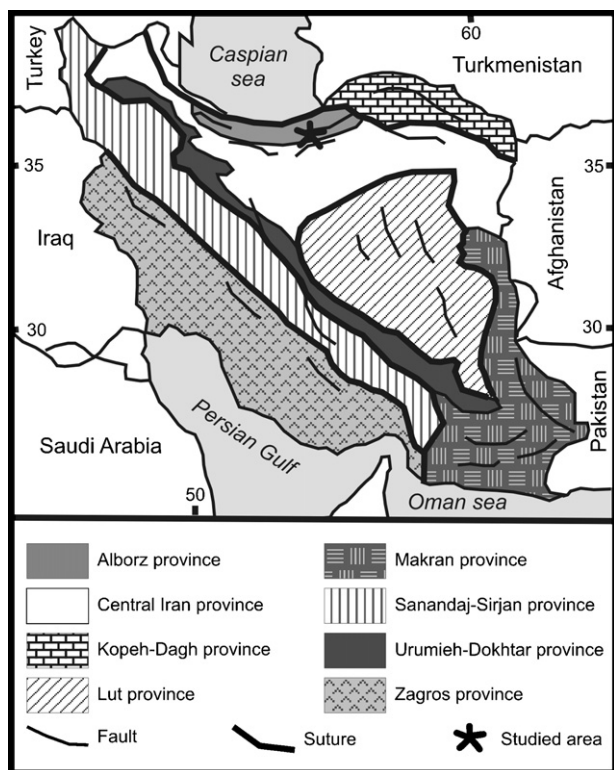


Fig. 1. Geological subdivision of Iran (redrawn after Berberian and King, 1981; Vaziri-Moghaddam et al., 2006).

Schéma géologique de l'Iran (redessiné d'après Berberian et King, 1981 ; Vaziri-Moghaddam et al., 2006).

- Alborz Mountains, in the North;
- Lut province;
- The Sanandaj–Sirjan belt, which extends from NW to South Iran;
- Zagros Mountains, in the west of the country, mainly represented by sediments of the Neotethys;
- Urumieh–Dokhtar;
- Makran.

The investigated area is located in the central Alborz Mountains, where one of the most complete Palaeozoic successions in Iran is exposed (Ueno et al., 1997). More precisely, the Shahmirzad section is located about 3 km North of Shahmirzad, at Global Satellite Position coordinates: (base) N 35°47.29', E 53°18.84'; (top) N 35°47.61', E 53°18.51'. The section is mapped in the Semnan quadrangle map of the Geological Map of Iran (Nabavi, 1987).

In the Shahmirzad area, sequences from Precambrian to Jurassic, with several sedimentary interruptions, are exposed with a general trend almost ENE–WSW direction (Fig. 2). The main structural feature of the area is the Bashm Thrust, a few kilometres north of the Shahmirzad section, resulting in Palaeozoic sediments being found adjacent to Eocene and Quaternary deposits. Moving southward from the Bashm Thrust, all the lithostratigraphic units from Precambrian to Jurassic are exposed in more or less parallel belts. The oldest rock units in this area are Precambrian shales and limestones,

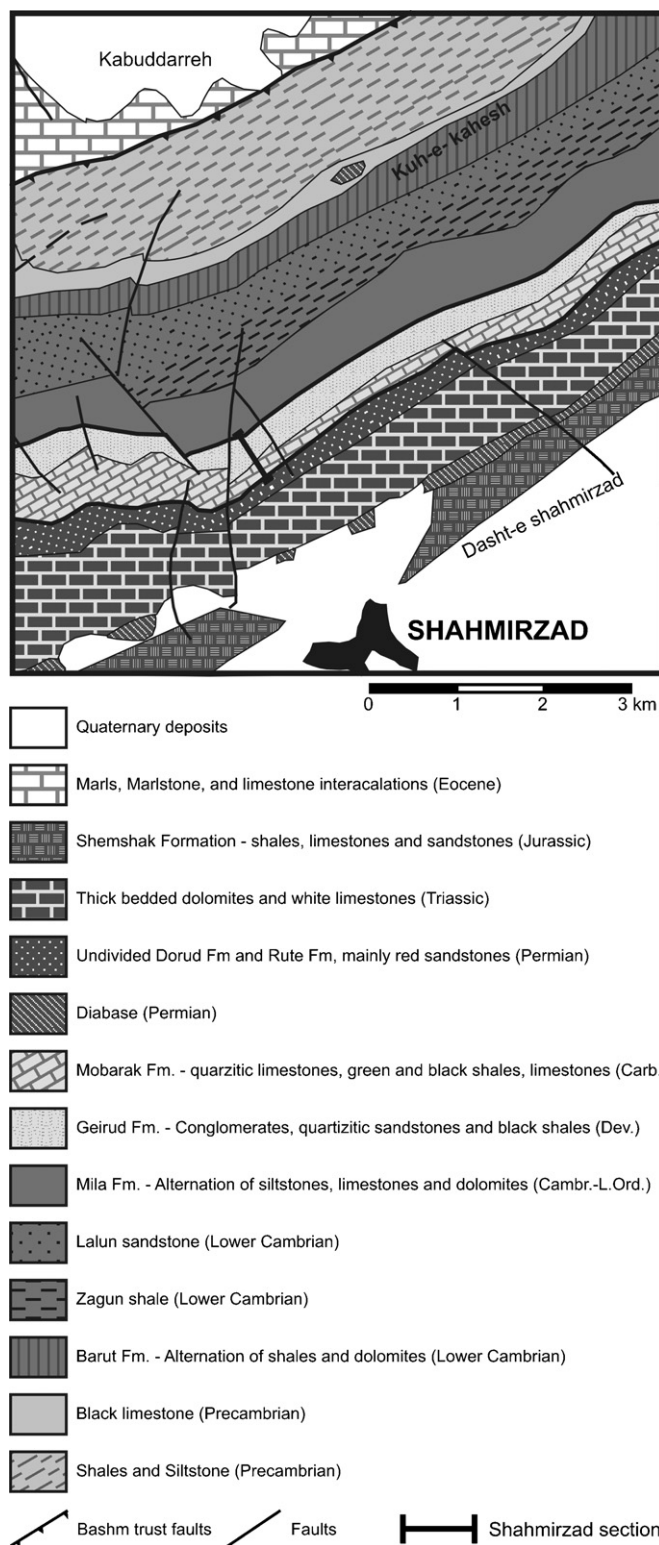


Fig. 2. Simplified geological map of the area close to the town of Shahmirzad (redrawn after Nabavi, 1987), with location of the Shahmirzad section.

Carte géologique simplifiée des environs de la ville de Shahmirzad (redessiné d'après Nabavi, 1987) et localisation de la coupe de Shahmirzad.

conformably overlain by four units spanning from Cambrian to Lower Ordovician: the calcareous to shaly Barut Formation, the Zagun shale, the Lalun sandstone and the Mila Formation. The latter unit is unconformably overlain by the Devonian Geirud

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