

New alloys from the sea

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This work brings an innovative processing route of manganese deep-sea nodules, which results in completely new manganese alloys. Deep-sea nodules were processed by aluminothermic method without the extraction of individual elements, resulting in the alloy „designed by nature“. Three levels of the amount of aluminium were used for the aluminothermic reduction and hence the alloys differ strongly in the amount of aluminium, which has a significant effect on their phase composition. The alloys have high hardness and very high wear resistance, comparable with the tool steel.

The reduced deep-sea nodules can be also used as the alloying mixture for aluminium or other metals. In the case of aluminium, the resulting alloys were processed by various powder metallurgy methods and the results on the basic characterization of these materials are also presented.

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