Chemical Element Analysis with ICP OES for Biotechnical Materials at IFW Dresden

Institute of Complex Materials (IKM), Department Chemistry of Functional Materials

Investigations

<table>
<thead>
<tr>
<th>Biodegradable Fe-Mn-C-alloys for medical applications</th>
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<td>Characterization of alloys after melting and casting process</td>
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<th>Metal release studies in a physiological electrolyte</th>
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<th>Titanium alloys for biomedical application</th>
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<th>Indium characteristics</th>
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<td>- good biocompatibility</td>
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<td>- low Young's modulus, 11 GPa (Ti 109 GPa, Nb 104 GPa)</td>
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<td>- low melting point (157°C)</td>
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Indium loss was observed during metalurgical processing. The chemical analysis was very important for optimization of the casting process. The repeatability of chemical composition was improved.

Method

Experiences

digestion methods

semi-quantitative survey analysis

quantitative precision analysis of main components

trace element analysis

layer and composite analysis

Detraction of element concentration of educts to calculate charge of material synthesis

Bioactivation of modern implant material based on TiNb

Characterization of TiNb-alloys

Characterization of Sr-dopedapatite layers on TiNb-alloys

Strontium release studies

Titanium alloys for biomedical application

Ti-40Nb samples with 5 and 10 wt% Indium addition were produced by casting and solution annealing.

Determination of cleaning progress (leaching of CaO) because of detection limit

Influences of element concentration to material properties

Monitoring of steps of synthesis route to optimize procedures

Precision analysis of new materials

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