Response to Reviewer:

1. Please check the References section

   Thanks for your suggestion. We have checked the references section in the revised manuscript. Such as checking the reference format and citing the necessary references. The modified part can be found from the lines 53-55, page 2 and lines 68-69, page 2.

   Lines 53-55, Page 2

   Besides, the plastic deformation and heat treatment can improve the mechanical properties of magnesium alloys [19,20]. The plastic deformation did not make pure magnesium alloys toxic [21].


   Lines 68-69, Page 2

   According to the previous research [23], the extrusion temperature was divided into two levels: medium and high temperature zone.

2. Improve quality of pictures

Thanks for your suggestion. We have improved quality of pictures in the revised manuscript, including the Figures. 5, 7 and 8.

3. Add instrumental method operating parameters, precision, accuracy and uncertainties of methods, QA/QC procedure.

Thanks for your suggestion. We have added the instrumental method, including the extrusion process, the preparation of SEM as well as TEM samples and Table 2 is added to introduce the concentrations of various ions in SBF, etc. The modified part can be found from the lines 71-73, page 2, lines 82-92, page 3, lines 94-100, page 3, and lines 108, page 3.

Lines 71-73, Page 2

During the extrusion, the extrusion temperature was in the range from 220 to 280°C, the extrusion speed was 8 m/min, and the extrusion ratio was 16:1. **Fig. 1** displayed the schematic diagram of extrusion process. After the extrusion, the extruded specimens were aged at 200°C for 12 h.
Before the SEM observation, the specimen was processed as follows. Firstly, the inlaid sample successively was ground with sandpaper of 100#, 600# and 2000#. Secondly, the specimen was polished to a scratch-free mirror using ca. 1 μm alumina polishing solution. Finally, the specimen was etched with 4% nitric acid (volume fraction) for a few seconds and subsequently rinsed several times with the deionized water. Considering that the magnesium alloys were easily oxidized in the air, the SEM observation should be conducted as soon as possible. The dislocation density and phase structure were determined with a transmission electron microscopy (TEM, JEM-2100, Japan) under an accelerating voltage of 200 kV. The TEM-sample was prepared as follows. Firstly, the thickness of the sample was ground to ca. 120 μm. Secondly, the sample was cut into wafers with a diameter of 3 mm.

Figure 1. Schematic diagram of the extrusion process.
Thirdly, the thickness was finely ground to ca. 50 μm. Finally, the sample was thinned by ion-beam thinning technology.

The tensile test was performed on a WDW-100A universal testing machine. The detailed experimental details can refer to our previous works [24,25]. The corrosion resistance was determined by the electrochemical test and immersion test in simulating body fluid (SBF) at 37 ± 0.3°C. The concentrations of various ions in the SBF were listed in Table 2. The specimens were cut into a cuboid with the size of 15 × 15 × 5mm for the corrosion tests. The electrochemical test was performed on an electrochemical system (Gaoss Union EC500). The detailed experimental details can refer to the reference [26,27].

<table>
<thead>
<tr>
<th>Ion</th>
<th>Ion concentration (mM)</th>
<th>Blood plasma</th>
<th>SBF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>142.0</td>
<td>142.0</td>
<td></td>
</tr>
<tr>
<td>K⁺</td>
<td>5.0</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Mg²⁺</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Ca²⁺</td>
<td>2.5</td>
<td>2.5</td>
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<tr>
<td>Cl⁻</td>
<td>103.0</td>
<td>103.0</td>
<td></td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>27.0</td>
<td>27.0</td>
<td></td>
</tr>
<tr>
<td>HPO₄²⁻</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>SO₄²⁻</td>
<td>0.5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.2–7.4</td>
<td>7.3</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. The concentrations of various ions in the SBF.
4. Can you have quantified the amount of corrosion products $\text{Mg(OH)}_2$, $\text{MgCO}_3$, $\text{Ca}_3(\text{PO}_4)_2$, $\text{CaHPO}_4$ and $\text{CaCO}_3$.

Thanks for your suggestion. These values are uncertain because the composition of corrosion products is complex and ions may be part of many compounds. In particular, the presence of $\text{CO}_3^{2-}$ leads to no solution to the equation. We can determine the relative content by the relative intensity of the peak value, but not the specific content.

5. Can you add others authors from Europe, not only from Asia

Thanks for your suggestion. These articles help to improve the quality of our articles, so we quoted them in the revised manuscript. However, according to the requirements of the journal, authors must be limited to those who have contributed substantially to the work reported. The authors who meet this requirement are all from Asia, including Gui Lou, Shumin Xu, Xinying Teng, Zhijian Ye, Peng Jia, Hao Wu, Jinfeng Leng and Min Zuo.