

Released ions and cytotoxicity study of eutectic gallium–indium (EGaIn) liquid metal in aqueous environment

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Liquid metal flows like fluid at room temperature with high electrical. One of the most actively studied liquid metal materials is eutectic gallium–indium liquid metal (EGaIn, 75% Ga and 25% In by weight). Gallium oxide skin on the EGaIn surface drops surface tension, thereby enabling the liquid metal to be moldable. It has been known that EGaIn has relatively low toxicity; however, little systematic study about EGaIn cytotoxicity has been reported. Here, we studied the time–dependent release of Ga and In ions from EGaIn droplet in aqueous environment and the effect of the droplet surface area and sonication process on the ion release. To evaluate the cytotoxicity of the ions released from EGaIn, we performed in vitro cytotoxicity test. EGaIn releasates are generally non–toxic, but the cells exhibited less than 50% proliferation after 3 days of culture in the presence of the EGaIn releasates by 20 min sonication. Our findings could provide a guideline in using EGaIn, especially for bio–related applications.