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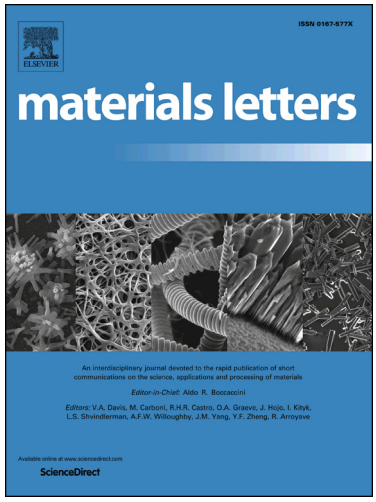

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Synthesis of luminescent gel-like materials based on glutamate and neodymium(III)

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Abstract

We have found that monosodium glutamate, a common food additive, combines with neodymium(III) chloride to form a gel-like luminescent material. Preliminary rheology tests suggest that arrested phase separation causes the material's gel behavior at high test frequencies. Luminescence spectra showed not only the expected Nd^{3+} emissions (upon 582 nm excitation) but also a broad emission in the infrared with maximum on 980 nm (upon 289 nm excitation), preliminarily assigned to a matrix effect.

Keywords: Gel; Monosodium glutamate; Neodymium chloride; Luminescence; Arrested phase separation

1. Introduction

A gel is generally defined as a three-dimensionally connected colloidal or polymeric network which disperses a liquid [1]. In addition to well-known applications in the food and cosmetic industries, some recent research efforts have focused on applications in water purification, sensors, electromechanical devices, etc [2,3]. Gels based on amino acids (AAs) as network-forming precursors have also attracted attention for use in bioengineering and other applications [4,5]. Incorporation of