I have to take off on Thursday (March 17.) Abstract Submitted

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Large local temperature gradient induced by surface plasmon heating of periodic metal structure RYOKO SHIMADA, HITOMI SAKAI, Japan Women's University — Mixtures of several gas or solution having different concentration can be separated by the gradient of temperature. This is the so-called Soret effect. This phenomenon is quite important for chemical reaction and material condensation/separation. For activating large Soret effect, it would be useful to focus on the surface plasmon heating (SPH) of metal nanostructures that interact with light. In this work, a local temperate gradient was created with the aid of SPH achieved for periodic silver structures in a mesoscopic length scale fabricated by a nanosphere lithography method. Excitation of this periodic structure (by blue laser, for example) could create a localized periodic temperature gradient, as large as ˜1,000 K/μm, as suggested from preliminary heat-transfer calculation. Experimental and theoretical results will be presented on site

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