

先端科学技術研究科 修士論文要旨

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要旨			
<p>In this study, we propose a novel snapshot hyperspectral imaging method using a rock filter consisting of a petrographic thin section between two linear polarizers. There is no need to use a lithography process on the scale of several micrometers or smaller to fabricate a rock filter, as this can be achieved by using power tools. A rock filter shows spatially varying spectral transmittance depending on its mineral composition in the petrographic thin section. By encoding the spectral information in the scene using a rock filter and decoding the spectral distribution by solving an optimization problem, a spectral image can be reconstructed. To improve the reconstruction accuracy, we estimate a self-guided image that displays scene information from the encoded image and integrates it with conventional reconstruction methods. Simulation experiments are conducted to evaluate reconstruction performance for LED spectra under varying the pattern and spatial resolutions. Additionally, we evaluate the improvement in reconstruction accuracy when a self-guided image is used in spectral image reconstruction. Finally, we demonstrate that hyperspectral imaging is feasible when a colorchecker is used as a target in a real environment.</p>			