

**[PO-E2]Poster Session 2**

Symposium E

Wed. Oct 31, 2018 5:45 PM - 8:00 PM Poster Hall

**[P2-36]Desiccation crack patterns based on phase-field modeling and their statistical properties**○Shin-ichi Ito<sup>1</sup>, Satoshi Yukawa<sup>2</sup> (1.The Univ. of Tokyo, Japan, 2.Osaka Univ., Japan)

We investigate morphological properties on desiccation crack patterns through numerical simulations of a phase-field (PF) model. Since our PF model does not require any assumptions related to crack nucleations and numerical lattice configurations, we can investigate the pattern formations that purely depend on material/external parameters. Our PF model showed us various pattern formations depending on a drying speed and material constants. We discovered, in particular, the difference of the drying speed provides a significantly qualitative difference in the pattern formations. Cellular patterns resulting from sequential fragmentations of straight cracks can be observed when using a slow drying speed, while random network patterns resulting from connections of micro cracks that appear simultaneously can be observed when using a rapid drying speed. We quantify the difference of the pattern formations statistically, and explain the origin of the difference on the basis of a simple continuum theory of a thin layer of viscoelastic material.