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Colloidal aggregation in microgravity by critical Casimir forces SANDRA VEEN, PETER SCHALL, University of Amsterdam, MARCO POTENZA, MATTEO ALAIMO, University of Milan, STEFANO MAZZONI, European Space Agency, GERARD WEGDAM, University of Amsterdam, VAN DER WAARLS ZEEMAN INSTITUTE, UNIVERSITY OF AMSTERDAM COLLABORATION, OPTICS AND MICROGRAVITY RESEARCH LABORATORY, UNIVERSITY OF MILAN COLLABORATION, PHYSICAL SCIENCE UNIT, EUROPEAN SPACE AGENCY COLLABORATION — We study aggregation and crystal growth of spherical Teflon colloids in binary liquid mixtures in microgravity by the critical Casimir effect. The critical Casimir effect induces interactions between colloids due to the confinement of bulk fluctuations (density or concentration) near the critical point of liquids. The strength and range of the interaction depends on the length scale of these fluctuations which increase as one approaches the critical point. The interaction potential can thus be tuned with temperature. We follow the growth of structures in real time with Near Field Scattering. Measurements are performed in microgravity in order to study pure diffusion limited aggregation, without disturbance by sedimentation or flow.

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