

Properties of Pickering Emulsions Stabilized by Naturally Occuring Microparticles

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Plant pollens, naturally occurring microparticles, have gained much interest from various research areas owing to the unique architecture, mechanical properties, and resistance to biological degradation as well as chemical attack. In this study, we revisit the properties of Pickering emulsions of oil and water mixtures stabilized by the bee pollens. Interfacial tensions (IFTs) of various types of oils and water containing the dispersed pollen microparticles were systematically investigated. The significant reduction in the measured IFTs, in virtually all oil-water cases, strongly suggests the amphiphilic nature of the bee pollens, and hence the potential of the bee pollens in utilization as Pickering emulsifiers for versatile oil-water interfaces. Pickering emulsions prepared with the bee pollens in various experimental conditions, which were oil-in-water in most cases, displayed the remarkable stability for several months. Possible applications of the bee pollen Pickering emulsions are discussed.