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Chasing drops: Following escaper and pursuer drop couple systems AISHA LEH, RAFAEL TADMOR, PREETI YADAV, PRASHANT BAHADUR, KUMUD CHAURASIA, LAN DANG, Lamar University — We study the Marangoni flow induced by two chemically different drops resting on a solid surface in air. We show that in all the systems studied, the Marangoni flow is induced at the solid-liquid interface as opposed to the air-liquid interface. This is true even for the case of water drop and alcohol drop on a glass surface (corresponding to the classical "tears of wine" case). Thus we explain the drop motion as a result of a surface tension gradient which takes place primarily at the air-surface region (and less at the drop-substrate or drop-air interfaces). The discontinuous motion of the drops, characterized by stops and jumps as in a "stick slip" mechanism is explained by an increase in the Laplace pressure that creates a higher anchoring pinning effect at the front edge of the moving drop. We discuss this in connection to the "tears of wine" case.

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