

Pattern formation under interacting Turing-Hopf instability

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Belousov-Zhabotinsky reaction (BZ) was confined in a reverse microemulsion (BZ-AOT system). BZ nanodroplets are surrounded by an anionic surfactant (aerosol OT) in a pool of oil (octane). This system displays a huge variety of spatiotemporal patterns including Turing patterns, Bulk Oscillations, Outwardly and Inwardly Spirals Waves, localized structures, spatiotemporal chaos, among others. Special emphasis is placed in patterns obtained when two or more different instabilities can interact. As examples, oscillatory Turing patterns, Dash Waves or Segmented Waves are patterns involving interacting instabilities. Our objective is focused in the understanding of the complex patterns formed when the system undergoes a transition from Turing to Hopf instability. In this way the system bridges the gap exhibiting moving Spots, and Sparkling Waves, which resemble the remarks that unexplored interacting instabilities could offer a rich array of patterns, some of them already predicted theoretically.