**Liquid metals for breaking down bonds at room temperature and templating them into planar structures**

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**Introduction** **and Aims**

Liquid metals and their alloys are extraordinary materials with rich physics and chemistries.1 Yet our knowledge about them is inadequate and their usage has largely remained limited to centuries-old conventional applications. This talk presents some of the novel concepts that liquid metals can offer and present our group’s efforts for the unification the scattered works on liquid metals that have emerged in recent years. Here liquid metals are explored as solvents for reintroducing their unique chemistry and their skins are investigated as reaction media to create new atomically thin materials.1-9

**Results and Discussions**

Fundamental observations are pursued to harness the power of electron-rich liquid metallic environments and control the skin properties to create surface compounds depending on the materials in the metallic core. The findings are used for creating two dimensional materials with functional applications. The authors will present the progress of the work on liquid metals in their group to date that ranges from applications in microfluidics to incorporating liquid metals as reaction media for the synthesis of low dimensional metal compounds. The emphasis will be on recent works that has resulted in the synthesis of two dimensional metallic compounds including Al2O3, AlN, GaPO4, carbon compounds and SnS based on the templating properties of liquid metals that promote atomically thin planes.

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