

Abstract Submitted
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Temperature dependence of charge transport in conjugated single molecule junctions¹ EEK HUISMAN, MASHA KAMENETSKA, LATHA VENKATARAMAN, Columbia University — Over the last decade, the break junction technique using a scanning tunneling microscope geometry has proven to be an important tool to understand electron transport through single molecule junctions. Here, we use this technique to probe transport through junctions at temperatures ranging from 5K to 300K. We study three amine-terminated (-NH₂) conjugated molecules: a benzene, a biphenyl and a terphenyl derivative. We find that amine groups bind selectively to undercoordinate gold atoms gold all the way down to 5K, yielding single molecule junctions with well-defined conductances. Furthermore, we find that the conductance of a single molecule junction increases with temperature and we present a mechanism for this temperature dependent transport result.

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