Sudo, Takahiro
Classification of topological manifolds by the Euler characteristic and the $K$-theory ranks of $C^*$-algebras. (English) [Zbl 1375.46051]

This article computes the $K$-theory of all two-dimensional manifolds and, more generally, higher-dimensional manifolds that can be obtained by taking a multiple connected sum of tori or of projective spaces, respectively. Then it is checked whether the ranks of the $K$-groups suffice to determine how many tori or projective spaces have been glued together. The main tool are long exact sequences. The paper closes with a definition of a connected sum of $C^*$-algebras.

Reviewer: Ralf Meyer (Göttingen)

MSC:
46L80 $K$-theory and operator algebras (including cyclic theory)
46L05 General theory of $C^*$-algebras
55N15 Topological $K$-theory
57N05 Topology of the Euclidean 2-space, 2-manifolds (MSC2010)

Keywords:
$K$-theory; $C^*$-algebra; topological manifold; Betti number

Full Text: Link Link