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# Testing space weathering models on A-type asteroid (1951) Lick

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A-type asteroid (1951) Lick has a very red visible and near-infrared reflectance spectrum, and it is one of the reddest Near-Earth objects. Its surface is probably affected by heavy space weathering processes. We investigate the possibility of a weathering saturation regime. We compare Lick's spectrum with those of silicate olivine after laser ablation experiments, and apply scattering and space weathering models. We successfully fit the spectrum of Lick, in terms of slope, band profile, and albedo. Results confirm that Lick has olivine with Mg number higher than that of the Brachina meteorite. The use of metallic iron inclusions in the model yields a product of volume fraction of inclusions times effective optical path length of about 0.039 microns, similarly to what observed experimentally after UV laser ablation of Mg-rich olivine. The surface of Lick is extremely weathered, indicating a saturation regime similar to what observed in the laboratory, and suggesting that the asteroid surface is probably older than about 10-100 Myr.