

SPECTRAL RECONNAISSANCE FOR 200 NEAR-EARTH OBJECT MISSION TARGETS. R. P. Binzel¹, F. E. DeMeo¹, M. Lockhart¹, A. Tokunaga², C. A. Thomas³, A. S. Rivkin⁴, S. J. Bus⁵, M. Birlan⁶, P. Vernazza⁷, and T. H. Burbine⁸. ¹Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139, rpb @ mit.edu, ²Institute for Astronomy, University of Hawaii, 2680 Woodlawn Drive, Honolulu, HI 96822, tokunaga @ ifa.hawaii.edu, ³Department of Physics and Astronomy, Northern Arizona University, Flagstaff, AZ 86011, Cristina.Thomas @ nau.edu, ⁴Johns Hopkins University Applied Physics Laboratory, 11100 Johns Hopkins Road, Laurel, MD 20723, andy.rivkin @ jhuapl.edu, ⁵Institute for Astronomy, 640 N. A'ohoku Place, Hilo, HI 96720, sjb @ IfA.Hawaii.Edu, ⁶IMCCE, Observatoire de Paris, Paris 75014, France, Mirel.Birlan @ imcce.fr, ⁷Laboratoire d'Astrophysique de Marseille, France, pierre.vernazza @ oamp.fr. ⁸Department of Physics and Earth Sciences, Framingham State University, Framingham, MA 01701 tburbine @ framingham.edu.

Introduction: We have obtained spectral reconnaissance measurements for more than 200 near-Earth objects having spacecraft rendezvous values ≤ 7.0 km/sec. The majority of our measurements are near-infrared spectrometry obtained through an ongoing joint observing program being conducted by MIT, the University of Hawaii, and the NASA Infrared Telescope Facility (IRTF) on Mauna Kea, Hawaii. All spectroscopic observations obtained in this campaign are being made publicly available via the website: <http://smass.mit.edu/> and are also linked through the IRTF website: <http://irtfweb.ifa.hawaii.edu/>. We also include and tabulate, when available, visible spectrometry measurements from our previously published observations [1,2].

New Measurements Description: On the 3-meter NASA IRTF, we utilize SpeX, a low-to-medium resolution near-infrared spectrograph and imager [3], to obtain 0.8- to 2.5-micron spectra of near-Earth objects. Under good seeing conditions the limiting magnitude for our program is near V17.5. Most observations are being conducted remotely from the MIT campus (Cambridge, MA) and the Paris Observatory (Meudon, France). We are working toward an operational goal to process and make available the spectral results within a few days of the observations. While we welcome collaboration opportunities, there is no precondition for collaboration for any researcher wishing to use these data. Our website gives a suggested acknowledgement for the use of these data.

Program Science Goals: Our initial analysis consists of determining the classification of our program objects in the Bus-DeMeo system of asteroid taxonomy [4]. Having knowledge of the taxonomic class can, in many cases, constrain the albedo and improve the size estimate [5]. From the taxonomic class and careful evaluation of the spectral properties, an assessment of the possible composition (such as likely meteorite analogs) can also be made [2,6]. Reconnaissance information on the size and composition can be used as critical science drivers for selecting missions among many accessible targets.

Concluding Remarks: We welcome broad community participation in target selection, observing, and data utilization for this program. Interested persons should contact the P.I. (Binzel) or the IRTF Director (Tokunaga) at the email addresses given above.

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References: [1] Binzel, R. P. et al. (2004), *Icarus* 170, 249. [2] Binzel, R. P. et al. (2004), *MAPS* 39, 151. [3] Rayner, J. T. et al. (2003). *PASP* 115, 362. [4] DeMeo, F. E. et al. (2009) *Icarus* 202, 160. [5] Stuart, J. S. and Binzel, R. P. (2004), *Icarus* 170, 295. [6] Thomas, C. A. and Binzel, R. P. (2010). *Icarus* 205, 419.